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Stand alone against Sinister Crabmen and Mangled Mutants
Author: T. P. Watts.

RING OF POWER
Search thru' the kingdom for the mystical ring Graphics/Text Adventure. Commodore 64.
Authors: Fred Preston & Bob McClement.

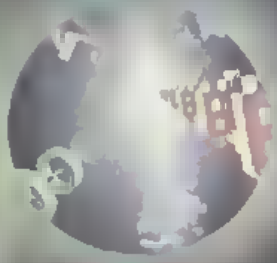
[illegible]
Maniacs out beware the deadly snapping Sharks.
Commodore 64 (Joystick or Keyboard)
Designer: John Hollis & Programmer Steve Hickman.

PURPLE TURTLES
Turtle bobbing with the cute Purpilus Turtilorum.
Commodore 64 (Joystick or [illegible]
Authors: [illegible] & Richard [illegible]

GRIDRUNNER
Spectrum version of VIC 20 No. 1 best seller
Spectrum 48K (16K)
Designer: Jeff Minter.

AQUAPLANE
Aquatic Action!
Spectrum 48K
Author: John Hollis.

XADOM
Battle through a sophisticated alien maze on this Arcade/Adventure.
Spectrum 48K
Author: Mike Mussell.



[illegible]
A battle [illegible] and Wits Faster than a speeding bullet!
Spectrum 16K.
Author: Freddy Vachha.

BUGABOO (THE FLEA)
No fleas on This Program!!
Itchy Action!!
Spectrum 48K
Author: [illegible]

[illegible]AMES
[illegible]ELNOR'S LAIR (Adventure)
Battle of Denizens of the Goblin Labyrinth and the Evil Wizard Velnor.
Spectrum 48K
By Derek Brewster of Neptune Computing.

BBC PROGRAMES

MINED-OUT
Save Bill The Worm from Certain Death.
BBC model B 32K.
(10 + 12 operating systems only).
Authors: I. Andrew & I. Rowlings.

BEEB-ART
High Quality Art/Design program for versatile manipulation of the BBC's graphics ability.
BBC model B 32K
Author: Dave Mendes.

THE GENERATORR
Superb Character Teletext Utility.
BBC model B 32K
By the author of Beeb-Art: David Mendes.

SMUGGL[illegible] COVE
You are caught in a fable full of horror and Black Beard's Treasure.
Spectrum 48K
Author: John Kenesily.

TRAXX
Pilot your way thru' the Grid.
Spectrum 48K
Designer: Jeff Minter.

RO[illegible] ANT [illegible]K
Battle the ants in the walled city of Anteacher
Spectrum 48K.
Authors: Sandy White

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COMPUTER & VIDEO GAMES

DECEMBER 1983 Vol III No 3

News & Reviews

GAMES NEWS 12
We take a look at new cartridge games for the Spectrum plus a light gun for Sharpshooters.

REVIEWS 29
Our new improved reviews section looks at a hot game for the Spectrum called Ant Attack, a driving game that brought high speed 3D action to the arcades now converted for the Atari, called Pole Position and Imagine's latest Bewitched for the Vic 20

VIDEO-GAMING 40
We take an in depth look at computer style keyboards for dedicated video-game centres, plus our regular Joystick Jury verdicts on Atarisoft Galaxians, Terrahawks plus many more.

ARCADE ACTION 86
We look at the machines that could revolutionise your local arcade — laser disc games. And believe us, they are amazing!

NEXT MONTH 203
Yet another look into the future.

Listings

TANK 112
The enemy Panzer divisions are advancing — and only you can stop them. Blast the enemy tanks and save the day. Armoured action for Texas tank commanders.

BREAKOUT 120
Blast those bricks in this Spectrum version of an arcade favourite. Can you break down that wall.

CYBORG 124
So this is what happens when robots decide to play a game. Android action on the Sharp.

LUNAR RESCUE 136
The innocent Noxanians are being threatened by a warlike race. Can you help them? Atari to the rescue.

Q*BERT 140
Turn the air blue with little Q*Bert — that master of arcade abuse! Try the pyramid game on your BBC B!

PATROL SHIP 149
Wake up you dozy space pilots! There's a Black Hole right ahead and threatening to suck you in.

MOON MISSION 152
Can you save the scientists from the space pirates? Action for the BBC.

WILD WEST 162
Howdy Partners! I'm rounding up a posse to ride out and get some gold. Fancy moseying along too? Saddle up your Vic

GUNNER 170
Gadzooks sir, those devilish enemy troops are marching towards us. War games for the Dragon.

Extra, extra . . .

Welcome to our wonderful Christmas issue! To help you get ready for the festive season we've included a bunch of exciting competitions and puzzles which will keep you busy until well after the last of the Christmas cake has been consumed.

For those of you on the lookout for a new micro — or maybe you are buying your first machine — there's our Games Players' Guide. We look at micros old and new and give you our verdict from a gamers point of view.

Once you've got a machine you'll need to know about software. So we've also included our top ten games for each machine — selected by our review team.

We also start a brand new series called Program Extra in which we talk to the people who write the games for each issue. We ask them about ideas, programming and modifications.

Features

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More on Donkey Kong plus a moan from an Oric owner.

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Our in depth look at new and not so new machines and the games you can play with them.

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Keith Campbell sends in the clowns!

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How to create expert games without being an expert programmer!

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Prizes galore in our Christmas contests

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On the trail of gremlins in commercial software.

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The interstellar conflict continues

THE BUGS 210
Well, have the Bugs gone too far?

CHARTS 213
Our top ten ratings for top micros.

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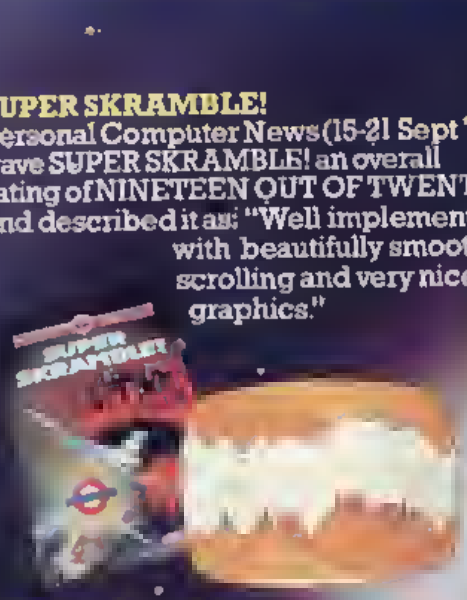
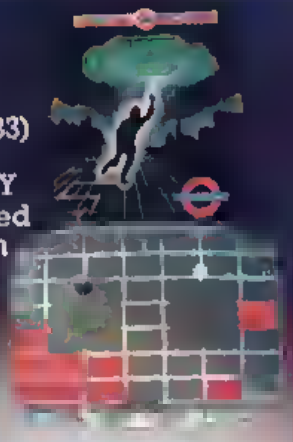
TERMINAL SOFTWARE

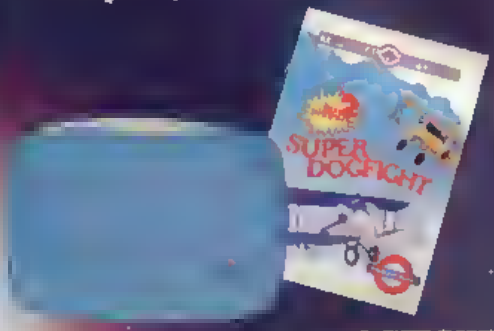
commodore 64 games cassettes

SUPER SKRAMBLE!
Personal Computer News (15-21 Sept '83) gave SUPER SKRAMBLE! an overall rating of NINETEEN OUT OF TWENTY and described it as: "Well implemented with beautifully smooth scrolling and very nice graphics."





SUPER GRIDDER
"... a compelling piece of frivolity that could give hours of fun." was the verdict of Personal Computer News (22-28 Sept '83).

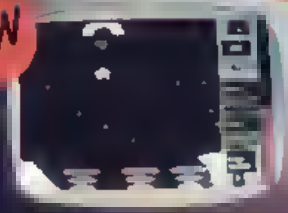


SUPER SKRAMBLE!
"An excellent game" said Video Games magazine

SUPER DOGFIGHT
first 64 games cassette to have SIMULTANEOUS TWO-PLAYER ACTION – realistic sound effects too.

STELLAR DODGER
A game of skill and anticipation in which you must dodge your way through asteroids to complete your mission.

NEW



NEW

HUNTER
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sinclair Spectrum 48k

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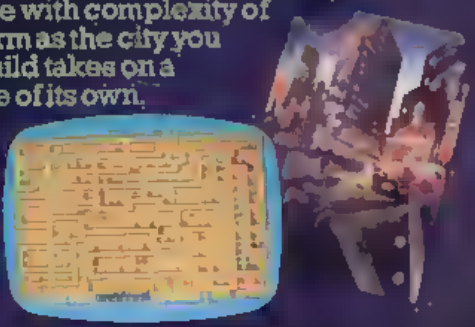

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THE NEW DIMENSION

Dear Sir,
I would like to congratulate you on an excellent magazine, especially with October's 3-D software and drawings.

I am writing about S. Nightingale's letter in Mailbag. When I purchased my Vic-20 back in March, 1983 it worked perfectly for about a month and a half, then the sound went funny and the picture was difficult to tune. I found that the problem lay in the cable between the modulator box and the computer.

Keep up with the excellent Vic-20 games and software reviews.
David J. Richards,
Beccles,
Suffolk

HOME FOR A LYNX?

Dear Sir,
I have now saved up enough money to buy a computer. I have £300 and am currently looking at the new Lynx. Would you please answer the following questions. Does the computer have sound? Is there much arcade software for the machine? And finally is there a specialist magazine for this computer?
Martin Parry
Market Harborough,
Leicestershire.

Editor's reply: Yes, the Lynx does have sound. Its capabilities are very similar to most other systems on the market that use the same chip i.e. the Dragon and Colour Genie.

But, you must bear in mind that there is very little software available at the moment. Some Adventure type games have appeared, but little else to about about. You won't really see much until the New Year if previous computer introductions are anything to go by.

No magazine yet either — although at the rate mags keep appearing and disappearing there may be by the time this letter is printed. However a National User Group has just been set up. Contact: Robert Poat, 53 Kingswood Avenue, Sanderstead, South Croydon.

QUESTION MASTER!

Dear Sir,
I am writing to ask you a few questions about my Pet.

1) On my Pet 4032, how do I interface it to the TV? Through the user port? I have tried and failed.

2) I have found a bug in Pet's DOS, I somehow saved a program under the name "". I cannot load or scratch it from my disc, is there any way of doing either of these things?

3) Where can I get a NPN 2N2222A transistor for an interface circuit? In my magazine it says I can get one from Tandy but they don't seem to have any.

4) If I bought an acoustic coupler, could I make my Pet talk to someone else's Pet without some special complicated hardware?

5) How do I PEEK the user port so I can make a joystick?
D. Pym and R. Pereira,
Flaunden,
Herts

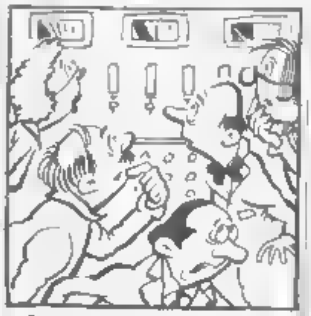
Editor's reply: 1) You need a special adapter to pick up the video signals. These cost about £40.00 and can be obtained from a number of places. Try: Small Systems Engineering Ltd, 2-4 Canfield Place, London, NW6.

2) Still trying to find out!

3) Try Technomatics in Edgware Road, London.

4) You'll need some software — but that should be sold as part of the acoustic coupler package.

5) This can be achieved through Basic by addressing one of the I/O ports on the 6522 chip. It's not as complicated as it seems, and many circuits have been published in the specialist Commodore magazines.



ARCADIA UPSETS

Dear Sir,
In the October issue of *C&VG* I was disappointed to see that my high-score on Vic Arcadia, which is higher than two printed, wasn't mentioned. However, I understand that you probably didn't receive it in time, but what really upset me was the way Spectrum and Vic Arcadia were grouped together.

These are really two different games, the Spectrum version has more levels and a key that can halt the game while you rest your fingers. The Vic version doesn't have this feature so I think it is unfair to compare the scores between them.

Also as I don't know which machine the five listed scores have been achieved on I don't know what my target is.
Colin Lenox,
Sunderland,
Tyne & Wear.

Editor's reply: You've got a good point Colin. In future we'll be asking competitors in our Hall of Fame which machine they used when playing Arcadia and also tell you which is which in the scores section.

ALAS, POOR OLD ORIC!

Dear Sir,
I own a 48k Oric and am writing to complain about lack of games for the Oric in *C&VG*.

When the Snakes program was published in the June issue, I, and I'm quite sure a few other Oric owners thought there would be more games soon.

C&VG is turning into a Vic and Spectrum owners magazine with all the games and features published for them. Please realise there are special magazines for Vic, BBC, Spectrum and ZX81 owners, and none for the Oric apart from the highly overpriced Oric Owner from Tansoft.

I'm sure Oric programs come into your office, and I'm sure if you printed some of them, other people would send in theirs.

Please could you tell me if there are going to be any games or features for the Oric soon. Finally, how about having a Hints and Tips page in which owners send in tips for their machines.
Paul Mansbridge,
Brighton,
East Sussex

Editor's reply: At the moment we have NO Oric programs suitable for publishing Paul, so if you would like to send some in we would be happy to review them. That applies to all you Oric owners out there.

As for the Hints and Tips page — we feature these on our Bug Hunter page each month.

And we think that if you look at the magazine you'll find more than just Vic and Spectrum programs!

MAILBAG

FOREIGN POLICY?

Dear Sir,
Replying to the questions posed by the Dragon 32 advert in the September 1983 (page 21): Yes, yes, yes, yes, yes, yes, yes, yes, yes, yes, yes, yes, yes, yes, yes, no, yes, no. And the machine I'm talking about is the Commodore 64!

The 64 may be more expensive but it has a bigger graphic screen, sprites and CP/M option. The 6510 microprocessor can access more than 64k and the user can switch memory.

Now that there is a lot of software being written in Britain for the 64, I would like to know what guarantee I have against damages during postage. The reason I'm considering buying British software is that the local dealers consider the 64 as a business machine and thus stock only business software and simple kiddies' games.

I've been reading *C&VG* for nearly a year now and I consider it a very exceptional magazine despite the 10p (M$0.35) rise in price. My only grouse is that it arrives here one month late each time and makes it impossible to enter any of the contests. How about starting a pen pal column so that we can contact other video gamers?

Soh Kam Hung,
Perak,
Peninsula Malaysia.

Editor's reply: Well, if anyone wants to contact Soh Kam Hung, write to us and we'll pass your letters on to him in Malaysia.

SOFTWARE ENTERPRISE

Dear Sir,
I have just left school with several "O" levels including Grade A in computer sciences.

Knowing the potential of the software industries a few friends and I are thinking of setting up a software house as a job.

I wondered if you could give us any advice as to how to go about setting up the company and what we have to do.

We have several programmers and an artist, so we have several good employees already.

U Henros,
Maidenhead,
Berks.

Editor's reply: A good first move would be to contact the Computer Retailers Association which should be able to give you the information you need to get started in this very competitive area. You can contact them at 1 Buckhurst Road, Bexhill-on-Sea, East Sussex.

PLUGGING THE VIC

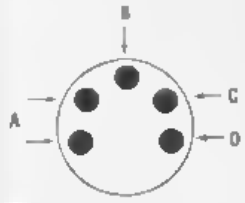
Dear Sir,
In response to Stuart Nightingale's letter in mailbag concerning Vic-20 problems.

I work in a service department for a national dealer and have had many Vic's to repair (SSSSH!)

The problem is always with the five pin Din connector which connects to the modulator, the leads come off inside the five pin Din plug. I have found this is due to the wire being too stiff and movement causes it to become loose and eventually fall off. I cure this by fitting a more flexible type of four way screened wire.

I have enclosed the wiring details below. If the yellow wire comes off then the sound goes, the red wire when it comes off usually short circuits to the screen and this being the power supply to the modulator causes the fuse inside the console to blow.

G Westerman,
Rochdale,
Lancs.



A Red (+VE)
B Screen lead
C Transparent (video) lead view from rear
D Yellow (sound)

MORE HARD TIMES . . .

Dear Sir,
I am writing in reply to Stewart Nightingale's letter in October's edition of your magazine.

I was given a Vic-20 For Christmas last year. After two months it went wrong. The keyboard completely packed up. I instantly took it back to the shop where it was bought. After a couple of weeks it was returned. I gained two or three months of happy programming, but then the sound went and again returned to the shop. After a further four weeks I got my machine back this time I only had a month of programming.

On this occasion the television kept on scrolling and the keyboard did not function properly. This time it was away for two months and only after persistent calls to the shop did I get a brand new computer.

I am glad to report that I have had no trouble so far with this computer.

John Cure,
Romford,
Essex.

MODEMS FOR THE DRAGON?

Dear Sir,
I have been looking through your magazine and saw adverts for modems for the Spectrum, and also an ad for Micronet 800. I did not see any mention of a modem for the Dragon 32. Please could you tell me if there is a modem available for the Dragon, or if I could use a modem from another computer if I bought an interface.

Brian Raftery,
Sligo,
Ireland.

Editor's reply: Micronet is currently available for the BBC B, Spectrum, Apple II and IIe, Tandy TRS80 models I and III and Pet 3000, 4000 and 8000 series. Link up for the Atari and Dragon is being considered, but nothing definite has been decided yet.

Modems are fairly standard pieces of hardware; it is only the interface which needs to be changed according to the computer being used. However, I do not know of any modems currently available for the Dragon. More information from Micronet 800 on 01-278 3143.

JET PAC PROBLEMS

Dear Sir,
Your Hall of Fame competition is a great idea, but Jet Pac should be excluded from this competition because it has a bug!

On the fourth sheet of Jet Pac there are plane-shaped objects which explode and give points. If the Jetman is positioned on the top right hand cloud, he cannot be killed.

Therefore the television can be switched off and the computer left running and your score will still be increasing. So if left long enough any score can be reached without touching the keyboard or joystick.

R Harris,
Braintree,
Essex.

Editor's reply: You are quite correct, Mr. Harris. If you leave the Jetman alone, your score increases by 55 points each time a plane hits the ground. Ultimate say, that this should not happen, and will replace your cassette if you return it.

C&VG REVIEWERS

Many thanks to everyone who wrote in offering to review software for the magazine. We have been swamped with replies! We're afraid we can't write back to you all individually but your names will be kept on our files.

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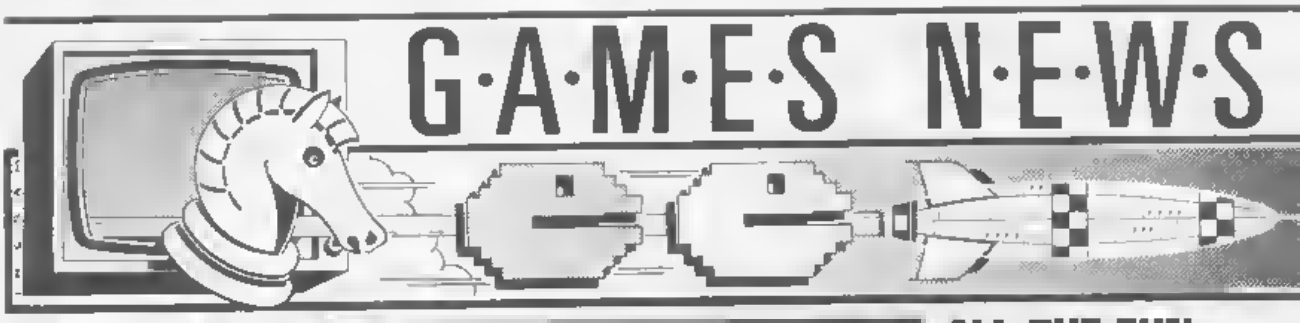


SALLY TAKES ON THE COWBOYS

SALOON SALLY

Saloon Sally is the new heroine of the Wild West dodging brawling cowboys and collecting the loot

All the action takes place to the accompaniment of a zany piano tune which speeds up to match the action ending in a thundering crescendo Saloon Sally is Psion's first game for the BBC model B

The premier Sinclair software writers already have hit games under their belt in the shape of Flight Simulation and Scrabble

Saloon Sally is in the shops now at £7 95 available from W H. Smith and other software stockists.

SHOW WITH A MAGIC MISSION

MICRO MISSION

From Wednesday, November 9 Central TV will be broadcasting from the far ends of the universe, from a space ship some 5,000 light years from Earth

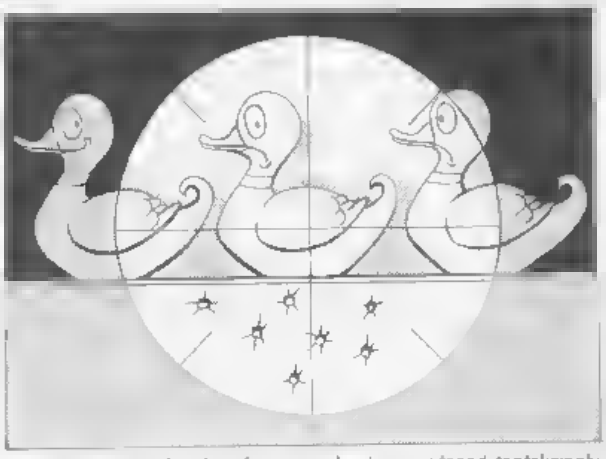
The Magic Micro Mission is a new series for young people that explores the realms of computer technology and seeks out the latest developments in computer games and applications Central say the show will be packed with fun, jokes, colour and costumes as the ship continues on its quest, commanded by its somewhat weird Beano-reading Captain. Already it has been dubbed "the technological Tiswas"

The Magic Micro Mission will aim to demystify computers Jargon Gobbler will explain computer terms like RAM and ROM, PEEK and POKE in simple language.

Particular emphasis will be placed on the avalanche of new computer games coming into the shops in time for Christmas Each week a group of five children will road-test a range of computer hardware and software and report back on their findings. In addition the *Mission* will investigate robots in both the home and in industry

The Magic Micro Mission will be crewed by two presenters plus a computer expert Dr John Barker, Lecturer in Physics at the University of Warwick There will also be Silicon Superstars from the worlds of entertainment and sport who have discovered the joys of computing

Illustration by Dorian Cross



GREATEST GAME UNDER THE BUN?

MR WIMPY

It's the greatest game under the bun! So say the authors of Mr Wimpy, the latest computer game from Ocean Software

In screen one, our intrepid chef has to assemble the ingredients for his burgers while at the same time keeping a wary eye on Weirdo the burger-thief who keeps trying to steal whole trays of buns Watch out for the moving manholes which appear at random or it's curtains for Mr Wimpy.

In following screens, the ingredients are placed tantalisingly on different levels and platforms A harassed Mr Wimpy has to chase round putting the burgers together while at the same time avoiding the murderous instincts of various edible baddies

As Mr Wimpy runs over the ingredients they drop down a level, pushing the ingredient below down a level until a whole burger is assembled at the bottom of the screen If the pursuing baddies come too close, Mr Wimpy can always use his pepper shaker to put them off the scent. Blasting them with a blast full of pepper will put them out of action for a while, but if he gets cornered he'll lose a life

On reaching the final screen, the game reverts back to screen two, carrying forward your hi-score, only this time things become more difficult Points are awarded for assembling burgers and collecting bonus gems, cartons of ice cream and the odd cup of coffee which are dotted around the screen

Wimpy An interesting development here is the link between the game and the Wimpy burger chain. The cassette has the Wimpy trademark emblazoned on the inlay Is this the start of a new wave of games with sponsors?

Mr Wimpy is controlled by either keyboard or joystick and is available from Manchester-based Ocean Software for the Spectrum 48k at £5 90

ALL THE FUN OF THE FAIR WITH DUCKS

CAROUSEL

Now you can enjoy all the fun of the fairground without leaving your armchair Carousel is a shoot-em-up game with a difference — flying ducks that is!

The game is a computer version of the shooting galleries found around fairs but with lots of added features

You start the game with a limited supply of bullets which you must use carefully to shoot ducks, owls and assorted letters of the alphabet

Carousel is for the BBC micro and will be available around Christmas from Cambridge-based Acornsoft with a price tag of £9 95

SIMPLE WAY TO CREATE GOOD GAMES

SCOPE

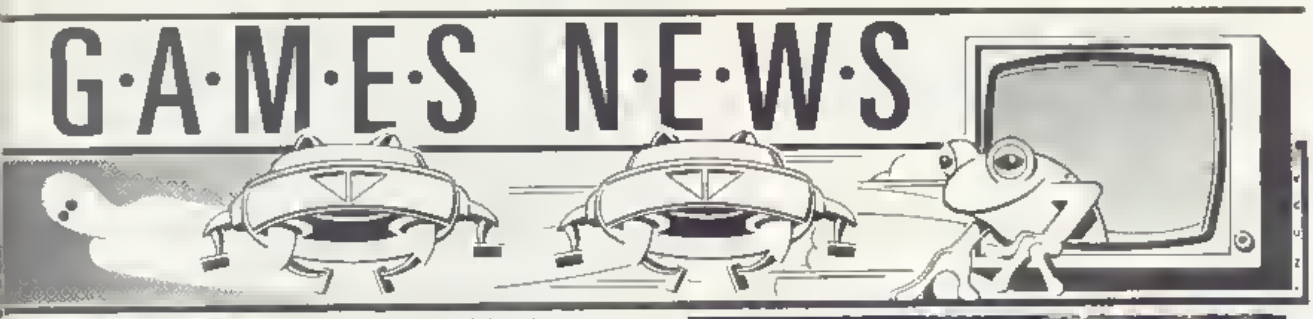
If you are trying to write a fast arcade game on the Spectrum then you can rule out Sinclair Basic.

You may like to try Scopa This is a new programming language available on cassette for a 48k machine and is, says its author, designed for writing fast arcade style games.

Scopa stands for Simple Compilation Of Plain English, which gives a clue as to why programs written with it run so fast It is a compiler, which means that when you have written your program, it is translated entirely into machine code before running This allows an inexperienced programmer to turn out quality games.

If you think that this is a good idea, then you can buy a copy from you local Smiths. It costs £11.95

G·A·M·E·S N·E·W·S



CATCH A FALLING NUGGET!

GOLD RUSH

Calling all gold diggers! Strike it rich on your Spectrum.

California isn't the venue, but an exotic gold laden planet called Oren.

Working the mines of Oron is a difficult and dangerous job, the mines consist of huge bottomless caverns. The gold, which falls from the roof of the cave can only be collected in two buckets.

But these can't be moved, so you have to build a series of ledges to knock the falling nuggets in the directions of the suspended buckets.

But nothing is ever this easy and the game includes the inevitable host of alien meanies who generally give you a hard time, getting in your way and eating the odd careless miner.

Gold Rush will be released in November for the 16k Spectrum and includes joystick and keyboard control options. The game is produced by Thorn EMI and will cost £6.95.

THE WEBBED WONDER IN THE SWIM!

AQUAMAN

Never fear — Aqueman is here! But can he save Neptune's daughters?

The Old Men of the Sea's daughters have been kidnapped and imprisoned in glass cases, each one guarded by a venemous sea serpent. Set in the deeps, fathoms below the surface, it is your job as Aquamen to rescue them.

Your search for the lost daughters will lead you through a deserted underwater city and through various murky caverns where killer crabs, octopuses lurk — and the all important oxygen carrying amoebae live!

Aqueman must collect these to replenish his ever dwindling supplies. Finally, after blasting all the amoebae, Aquamen must battle against an army of crabs.

At last he arrives in a cavern in which the captured daughter is languishing, guarded by a hissing serpent. The only way to get past this deadly obstacle is to swim back to the crabs which are littering the ocean floor, collect them and feed them to the viper. This will poison it and Neptune's daughter can be released and escorted to her Dad's palace.

Once there Aquamen's quest starts all over again and rescuing the next daughter is a far more arduous task!

Neptune's Daughters runs on a Commodore 64 with joystick control and is available from Manchester based English Software for £9.95.

THE LIGHT FANTASTIC SHOTGUN!

LIGHT RIFLE

If fairground shooting games always seem to lack a little something on your computer then Stack Computers of Liverpool have now come up with that extra ingredient.

The Stack light rifle brings the real feel of the shooting range to your micro.

Compatible with six games also supplied by Stack you can go on a Big Game Safari, pot some gronse in the Glorious Twelfth, do what a man's got to do in High Noon, shoot at the crows in Crow shoot, as well as Rats and Cats and Escape from Alcatraz.

The rifle itself disassembles to make a hand gun for use in close combat games like High Noon.

The rifle is due to be launched at the Northern Computer Fair in two weeks' time and will cost £29.95.

DESIGNER OF THE MONTH

NAME. Jeff Minter.

GAMES. Gridrunner, Attack of the Mutant Camels, Hovver Bovver, and coming soon Revenge of the Mutant Camels.

BORN. Reading, Berkshire in 1961.

COMPUTER HISTORY. Jeff learned Basic on the school Pet although was not considered the local computer whizz being denied a place on the computing course. He was not the school dunce either earning A levels in Physics, English, Maths and a university place. The academic life did not suit Jeff and he found himself compelled by his tutor. A change of college and of courses followed soon after.

It was during his time at college number two — Oxford Polytechnic — that Jeff bought a Vic-20 and learned machine code. Looking at the software available Jeff was convinced he could do better and set out to write a copy of the arcade game Defender on his Vic. Encouraged by demand for his game Jeff wrote another one — Traxx — and took them both to the Berbican show where they sold well.

Now there was no looking back — and Llamasoft was born — named after his favourite animals.

Jeff describes the business as a small family firm "just me and my mum".

The game that really made Minter's name is Gridrunner — a super fast shoot 'em up — which is selling well in the US as well as in Britain, having knocked Choplifter off the number one slot in the American charts earlier in the year.

FAVOURITE FOOD. Liver sausage sandwiches, burgers, and most junk foods.

FAVOURITE DRINKS. Coke, Guinness, and wine.

FAVOURITE TV PROGRAMME. Not the Nine O'Clock News.

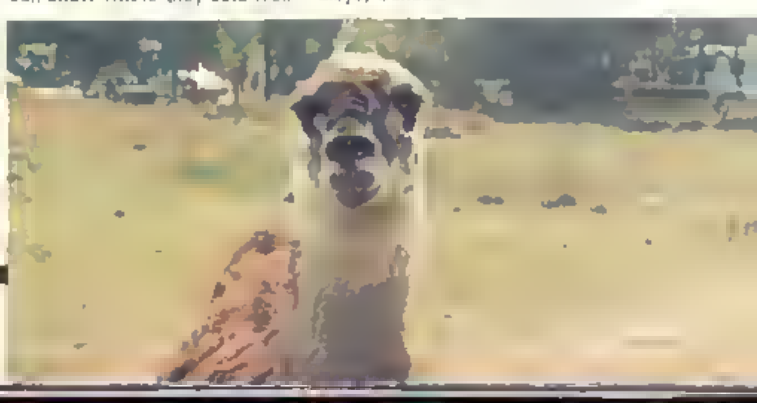
FAVOURITE COMPUTER PROGRAMS. Hovver Bovver, Replon, Stix.

COUNTRIES VISITED. America, France, Spain.

PETS. Two Siamese cats and an Afghan hound called Woody.

AMBITIONS. To write better and better games.

FAVOURITE POP GROUPS. Pink Floyd, Genesis.



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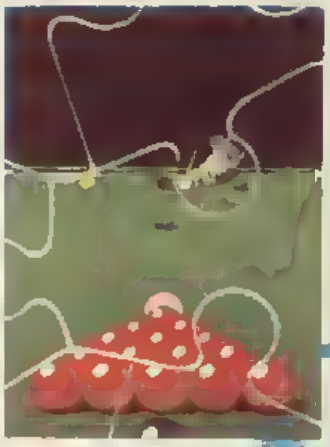

SNOOKER *VE 01 32*

Visions Snooker brings all the excitement and all the tension of big time tournaments to your TV set
With an advanced program written by a 19 year old undergraduate at Queens College Cambridge, it makes Pot Black look like a load of old balls
Visions Snooker for the **ELECTRON £8.95**

DAREDEVIL DENNIS *VE 02 32*

So you think you could be a stuntman? Well test your skills against these hazards and see if you're still game There are only three different scenes in this movie so you shouldn't find the going too tough! There's no denying that the money's good, but the question you should be asking yourself is will you live to spend it? If you can ride a motorcycle — and we think — two of the frames should be child's play, but for the snow scenes you'll need to be of Olympic class Dare Devil Dennis for the **ELECTRON £7.95.**

PENGI *VE 03 32*

Wandering around an ice flow may seem to be an idyllic way of life to some people, but my advice to such philanthropists is try it It's not that life out here is a bore. I mean, I lose all my aggressions kicking the hell out of ice blocks. 'Strange habit,' I hear you say, but you don't know what's going on around here. Let me fill you in. It's quite simple really If you want to get from 'A' to 'B' around here you have to go via 'C' This is largely due to the area's ice making machine going berserk and trying to compete with Mother Nature This overgrown refrigerator thought anything nature could do it should better I could live with this if it was the only problem since I'm beginning to enjoy this bizarre ice hockey Unfortunately this is the least of my worries The other penguins around here have been eating plankton for so long they're starting to radiate from all the trace elements they've been consuming — and I think it's affected their brains as those possessed penguins seem to hate any of their brothers who doesn't look like them — and I am set about to stay here and argue with them — anyway, whoever heard of a penguin having a conversation
Pengi for the **ELECTRON £7.95**

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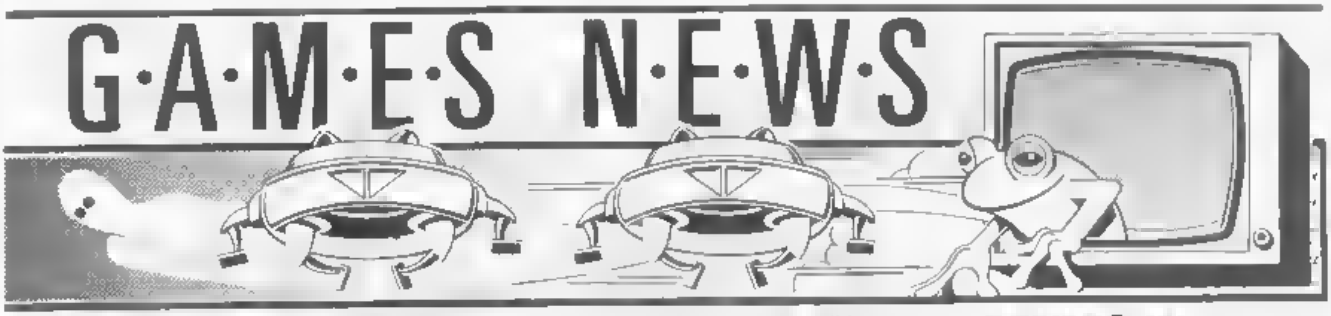


MACK THE MECHANIC DROPS IN

MECHANIC

Mack the mechanic is much in demand in this game to repair your war battered helicopter

Fly your chopper over mountainous terrain protecting the tanker in the bay from a bombardment of missiles fired by enemy subs

Every time the tanker sustains a direct hit, members of the crew jump into the water to swim to the shore. You have to pick them up before they drown.

Once safely aboard fly the shivering crew back to base and deposit them in the army huts Get Mack the mechanic to check your chopper for damage and fuel supplies

As if this were not enough to keep you busy, one of the mountains on the island is about to erupt into a fierce volcano

Krakatoa is the latest 48k Spectrum game from Abbex Software Available from the London based firm now at £5.95

Also new from Abbex this month is a Flight Simulation program for the Commodore 64 Complete with no less than nine flight controls you must take off, fly around a path of beacons and land safely again Flight Simulation costs £6.95

LESSON IN WARTIME STRATEGY

KNIGHTS

If someone mentions desert rats to you and you think of gerbils, then you may benefit from the history lesson contained in this latest war simulation called Knights of the Desert

The game takes you back to the height of World War II. The brilliant German general Rommel is pushing his Panzer divisions further and further into North Africa

You play the part of Montgomery — Monty to the man who served under him — commanding British forces with the objective of pushing the enemy back towards the North African coast and capturing key towns such as Tobruk and Benghazi

You can select a two player game where you command either the German forces (whose campaign is hindered by supply shortages) or the British forces (who must contend with the swiftness of the Panzer units and low morale).

The solo option the computer only directs the British forces The game is the work of the American strategic games experts — Strategic Simulations Inc — and is imported to the UK by Centresoft of Birmingham

Running on the Atari 400/800, Commodore 64 and Apple II it will set you back £29.95

BEE WITH A VERY SWEET TOOTH!

BIRDS AND BEES

Knowing about the birds and the bees won't help you in this game! You play the part of a single minded bee whose one aim in life is to fill his hive with honey

Flitting around from flower to flower happily collecting nectar he is suddenly attacked by all sorts of nasty insects who think he'll make a great hors d'oeuvres!

Your poor bee has got to avoid birds, spiders, caterpillars and make it safely back to the hive with his cargo of nectar Should he get caught in a spider's web, he'll die — and watch out for the wandering teddy bear.

Scrolling from left to right, the game becomes steadily more difficult as the further you are from home the more nasties there are to contend with and some rapid evasive action will be necessary to get back safely

Beware of overloading him with nectar — this will slow him down and he's more likely to get caught wobbling home than speeding back to base

Optional use of the Currah Speech Synthesiser is available with the Birds and the Bees which will say "Nectar" to you every time some is collected and will also tell you when you've lost one of your three lives.

You can play the game using a joystick or keyboard and it runs on a 48K Spectrum and is available from Bug-Byte at £5.95

Also new from Bug-Byte is a graphical adventure game incorporating some 170 screens of different pictures

In the valley live two kings, one good and one evil. The aim of the game is to steal a treasure chest from the evil king and give it to the good king In your quest there is the odd dragon to kill and princess to rescue and help is on hand from bands of Elves — but beware — danger lurks in the guise of the Terrible Trolls

Twin Kingdom Valley is available for the BBC and Electron for £9.50 and the Commodore 64 after November for around the same price

DENNIS IN THE LAND OF HORRORS

DENNIS

The world's most hen-pecked husband has been immortalised on computer

Husband of the Prime Minister, Dennis Thatcher stars in a new adventure called Dennis Through the Drinking Glass

Your job is to guide Dennis through the world of politics helping him to avoid the horrors who haunt the corridors of power, as Dennis attempts to reach the sanctuary of the Gravediggers Arms

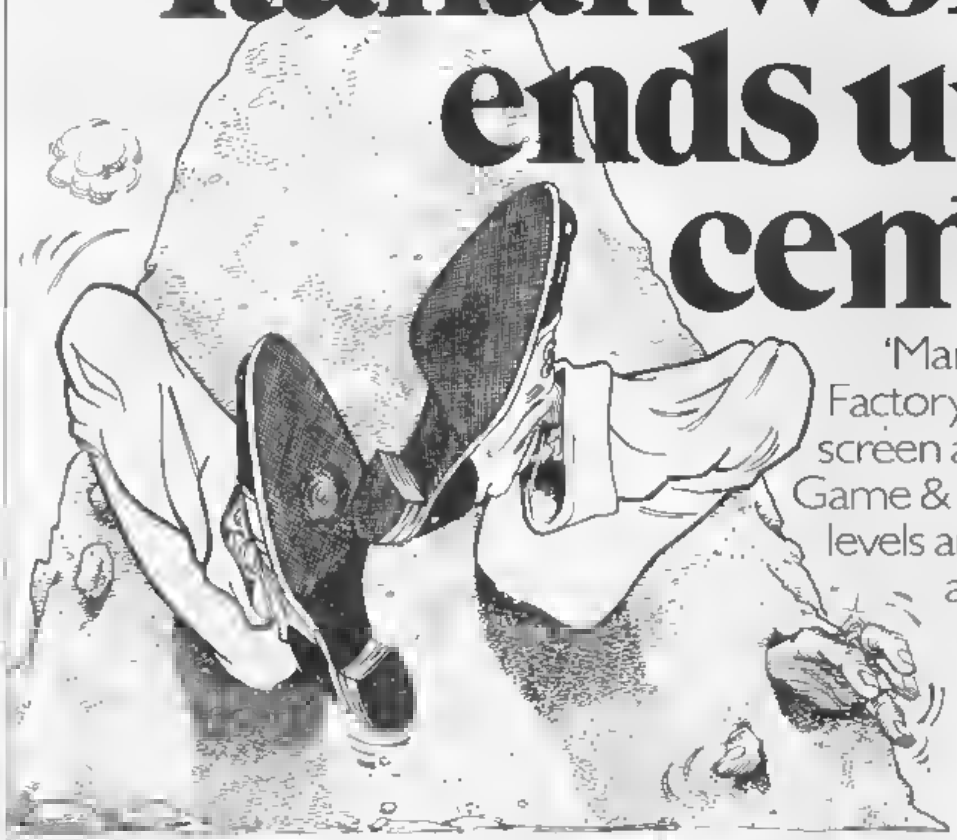
All the scenes in the adventure are introduced in rhyming verse The game package comes with caricatures of the main characters and a poem

Ken Livingstone, Sir Keith Joseph and Norman Tebbit are included and, of course Iron Lady makes an appearance

Dennis Through the Drinking Glass will be available in early November for the 48k Spectrum from Applications Software costing £5.50

Illustration Dorian Cross

Italian worker ends up in cement.



'Mario's Cement Factory' is the latest wide-screen adventure from Game & Watch, with 2 skill levels and (for super ace show-offs) a memory that remembers and keeps your highest score.

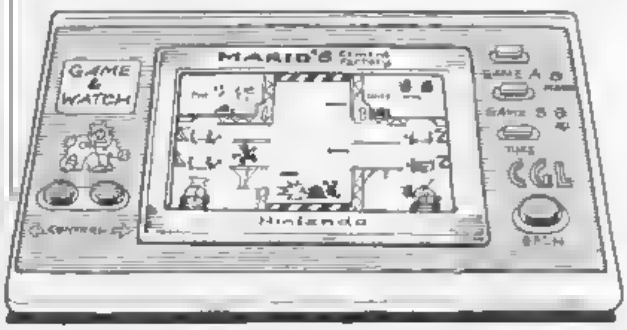
The game even incudes a quartz clock display and alarm (that's why they call it "Game & Watch").

Get it from your games shop now – and save Mario's mates from a concrete overcoat!

Mamma mia! Can Mario, the hero of Donkey Kong, survive in the world's wildest cement works?

Racing from floor to floor, leaping across unguarded lift shafts, Mario has to release cement hoppers before they overflow and engulf the truck drivers below.

The hoppers fill faster and faster as Mario's score mounts up – skilful players can win more lives, but one false move and it's finito!



THE MOST FUN YOU CAN GET IN YOUR POCKET.

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CGL MARIO'S CEMENT FACTORY IS JUST ONE IN THE FASCINATING SERIES OF GAME AND WATCH FROM CGL. SEE THEM NOW AT BOOTS DIXONS JOHN MENZIES WH SMITH TOYMASTER HAMLEYS JOHN LEWIS PARTNERSHIP SELFRIDGES AND OTHER LEADING STORES AND GOOD TOY SHOPS

GAME & WATCH

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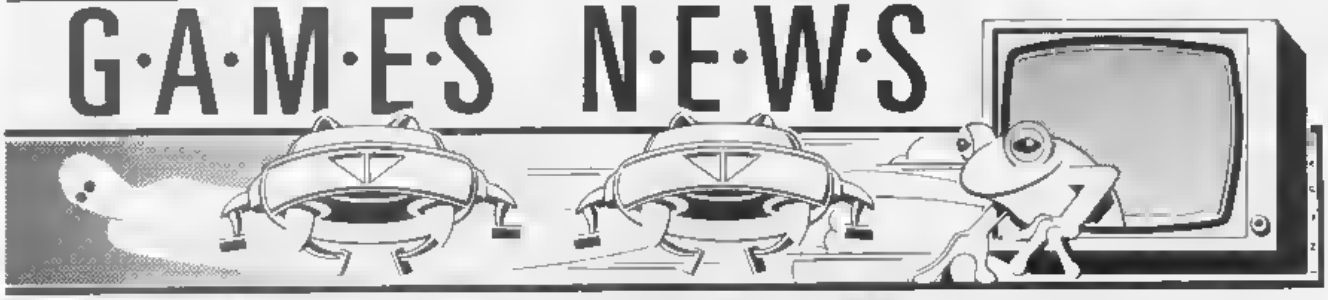


WHO WANTS TO BE A MILLIONAIRE?

MICROPOOLS

If you are tired of people telling you that micros are great fun for playing games but have few other uses then we now have the ammunition to nail that cynical view for all time.

This latest software package can help you and your computer win the football pools.

According to the program's manufacturers Micropools makes better forecasts of football match scores than the predictions that appear in the national newspapers.

The cassette comes complete with a user manual which contains step by step instructions on how to get the best forecasts.

Micropools is the brain child of Spencer Software of West Sussex.

The game is available now at £7.95 for the 48k Spectrum, BBC B, Commodore 64, Commodore Pet, Newbrain and the Dragon.

Should any of you *C&VG* readers win a million with this program then don't forget where you read it first. Any donations will be gratefully received!

£10,000 IS STILL ON OFFER!

KRAKIT

Still no winner in the £10,000 Krakit game from Artic computing.

The game attracted widespread publicity in the computer press last year when the firm announced that £10,000 was up for grabs.

The prize money is now much more than this as the interest on £10,000 is also payable as prize money plus an extra £1 for every copy of Krakit sold.

The idea of the game is to discover the bank and the city where the money is being held. If you do this Artic will fly you to the correct city to collect your prize money.

A spokesman at Artic said that nobody had come close to getting the right city yet — though the game was still selling he could not tell us how many £1s had been added to the prize money.

New games in the pipeline from Artic include a line drawn 3D shoot 'em up for the Spectrum and Snooker.

DON'T SHOOT THE WHALE — OR ELSE!

MOBY DICK

Save the Whale activists will love Moby Dick! If you depth-charge the famous big White whale by mistake in the heat of a raging sea battle the Greenpeace ship comes after you.

The idea of the game is to down the helicopters that are bombarding your destroyer, and depth charge the subs that lurk in the deep — but watch out for that whale!

When you shoot down a helicopter be sure to catch the pilot who parachutes to safety.

Moby Dick runs on the Commodore 64 and is the latest addition to the PSS range.

Also new from the Coventry based firm is a seven level Scramble-type game with a nuclear reactor waiting to be destroyed at the end of the winding tunnels.

Spectrum owners are also included in this new package with a game called Guardian which casts you as a space age prison warder. The worst criminals are housed in a laser grid in deepest space. It is your job to stop them escaping.

Armed with a powerful laser gun you must fly your craft with great precision around the perimeter of the prison forcing them back within its electronic walls.

The games are available now at £7.95 for the 64 titles, and £5.95 for the Guardian.

TRY PLAYING YOUR FACE YOUR WITH SPECTRUM!

A whole new world of games is opening up for Spectrum gamesters following the recent introduction of the long-awaited Microdrives, Sinclair has just launched the Spectrum Interface 2.

This device, which was previewed at the PCW show this Summer, is now generally available by mail order with none of the delays associated with the Microdrive and its Interface 1.

Interface 2 connects to the user port at the back of the Specirum and will work on either a 16k or 48k machine, and with or without an Interface 1.

It enables the Specirum to accept software on ROM cartridge as well as cassette, and also contains 2 joystick ports.

The main feature of the cartridge facility is that the software will be built into a chip and therefore takes no RAM. This means that a program which normally runs only in 48k will now run in cartridge form on a 16k machine.

The joystick scores over its rival, the Kempston Interface, as there is provision for 2 controllers while Kempston has just one.

The new Sinclair software will be available to work with joysticks, and the manual also tells you how to adapt your own programs as well.

There are ten programs available on ROM initially, six from Sinclair's own range and also four Ultimate games, including Jet Pac.

To load a program from cartridge couldn't be easier. It's a lot faster than either cassette or Microdrive but, of course, you can't store your own programs on cartridge.

You simply plug the Interface 2 into the back of the Spectrum and plug the cartridge you wish to use into the slot on the interface.

As soon as you turn on the computer, the program is loaded and ready to play. It's as easy as that!

The introduction of joysticks may turn some of the software houses away from making programs compatible with other makes of joystick. It is likely that the Sinclair official interface will become the standard.

A ZX Interface 2 will cost you £19.95, while each ROM cart will retail at £14.95. Any standard Atari type joystick will work, and you'll have to buy these separately.

The REAL Challenge!

For your ORIC or SPECTRUM

Jogger Guide your joggers across a 4-lane motorway and crocodile infested river to reach their safe haven through the gap in the fence. Each time a jogger is safely home the next one will have to encounter more lorries and cars on the motorway but fewer crocodiles and logs in the river. Full on screen instructions. M/code sound effects and full action colour graphics.
Oric Author - Adrian Sheppard
Spectrum Author - Mike Howard
Oric 48K - £4.95 Spectrum 16/48K - £4.95

Quincy A superb dice game for 2 to 6 players. 3 throws per go to try and score points by obtaining certain combinations. 1 e 3 of a kind, a run pairs etc. 13 go's to complete a game. The highest score is the winner! It's a game that is easy to learn but can be won by skilful and thoughtful play. Full colour graphics, on-screen instructions, bonus scores etc.
Author - Tony Churcher
Spectrum 48K - £4.95

Dinky Kong Attempt to rescue your lovely girlfriend who is held captive by the angry gorilla. As you climb the connecting ladders and move along the gangways the gorilla will be throwing barrels and fireballs at you! The only way to reach her is to leap over these obstacles and progress to the top. M/code action with sound effects, full colour action graphics, skill levels etc.
Author - Adrian Sheppard.
Oric 48K - £6.95

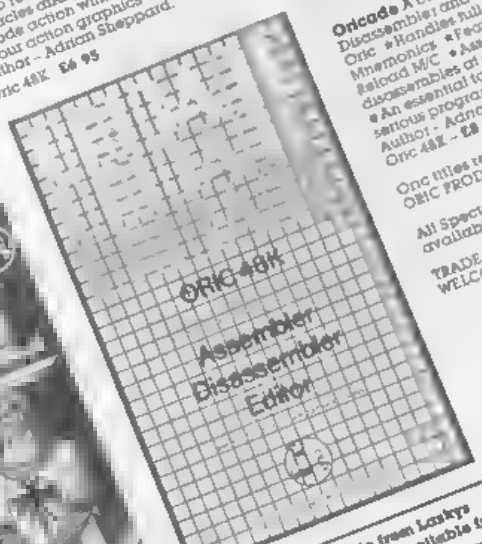
Oricade A combined assembler, Disassembler and editor for the Oric. • Handles full 6502 Mnemonics • Features Save and Reload M/C • Assembles and disassembles at any address • An essential tool for any serious programmer.
Author - Adrian Sheppard
Oric 48K - £8.50

Oric titles recommended by ORIC PRODUCTS INT. LTD

All Spectrum Software is available on Microner 800

TRADE ENQUIRIES WELCOME

Grail You have been chosen to seek and recover the Holy Grail from the Castle Perilous. Throughout the course of your task you will have to use your skill, intelligence and logic (along with a little luck) as you encounter many foes. You will have the opportunity to gather weapons and armour to fight with, but if you are wounded your strength will drain away - many other features such as warp, jewels etc.
Author - Adrian Sheppard
Oric 48K - £6.95



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Oric Author - Adrian Sheppard.
Spectrum Author - Mike Howard
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DISK DRIVE for ZX SPECTRUM

Now from SPECTRUM a Disk Drive for the ZX SPECTRUM exclusive to SPECTRUM stores see our ad for full details

Sensational COMMODORE OFFERS

see opposite

MEMOTECH MTX 500

A Super new computer now available from SPECTRUM see our ad for details - or call into your local SPECTRUM dealer NOW!

INDESCOMP ACCESSORIES for ZX SPECTRUM

A super new range of add-ons for your ZX SPECTRUM exclusive to SPECTRUM stores see ad for full details

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Check our address page! - there are many new SPECTRUM dealers throughout the UK so there's a good chance there'll be a SPECTRUM centre near you

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SPECTRUM service centres will ensure that should your machine 'go down' we will get it running again as quickly as possible. We also offer extended warranties at reasonable prices too! - ask your SPECTRUM HOME COMPUTER CENTRE for full details

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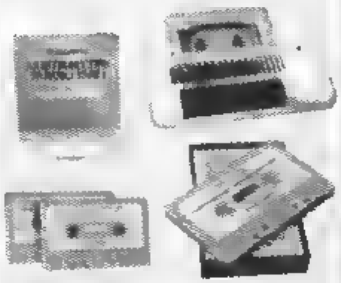

A complete Home Computer system including the VIC-20 Computer, a Cassette Unit, Introduction to BASIC part 1 - a simple explanation of computer programs - Blitz, Type-A-Tune, Race & Hoppit. A fantastic deal!! and great value-for-money But HURRY! offer only while stocks last.

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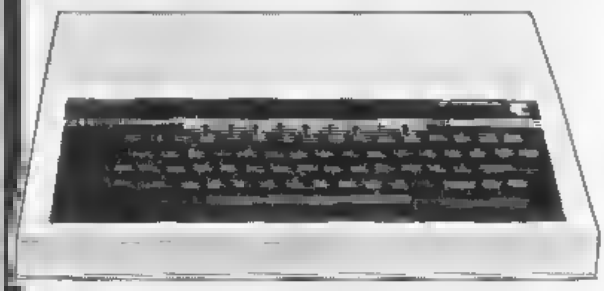

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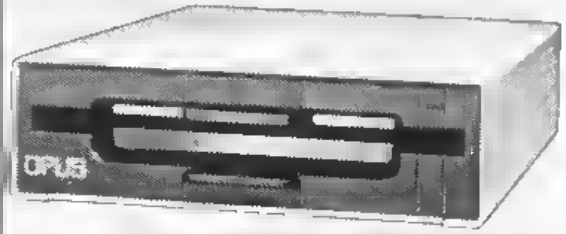

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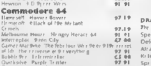

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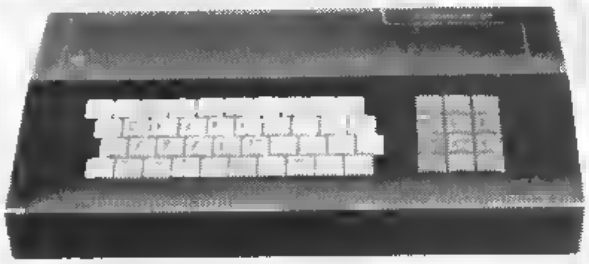

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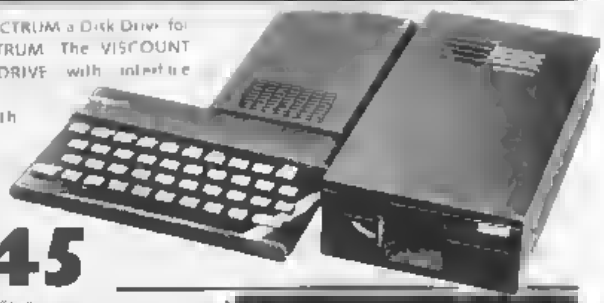

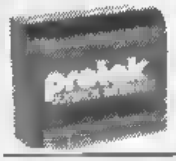

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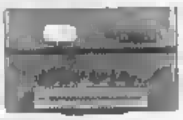

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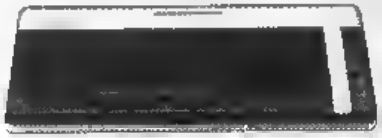
ATARI

New! 600XL



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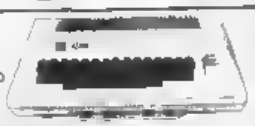

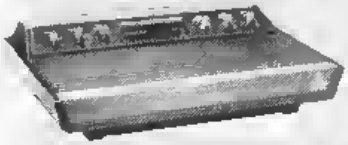

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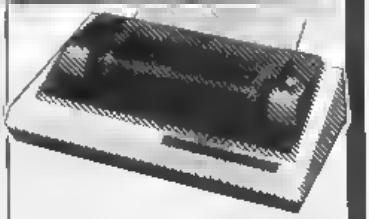

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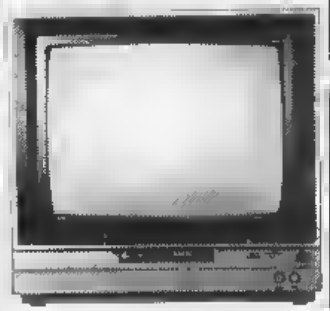

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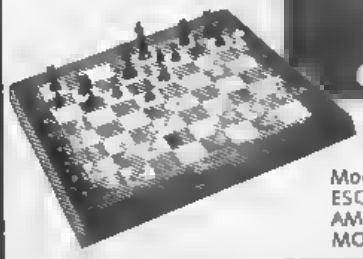

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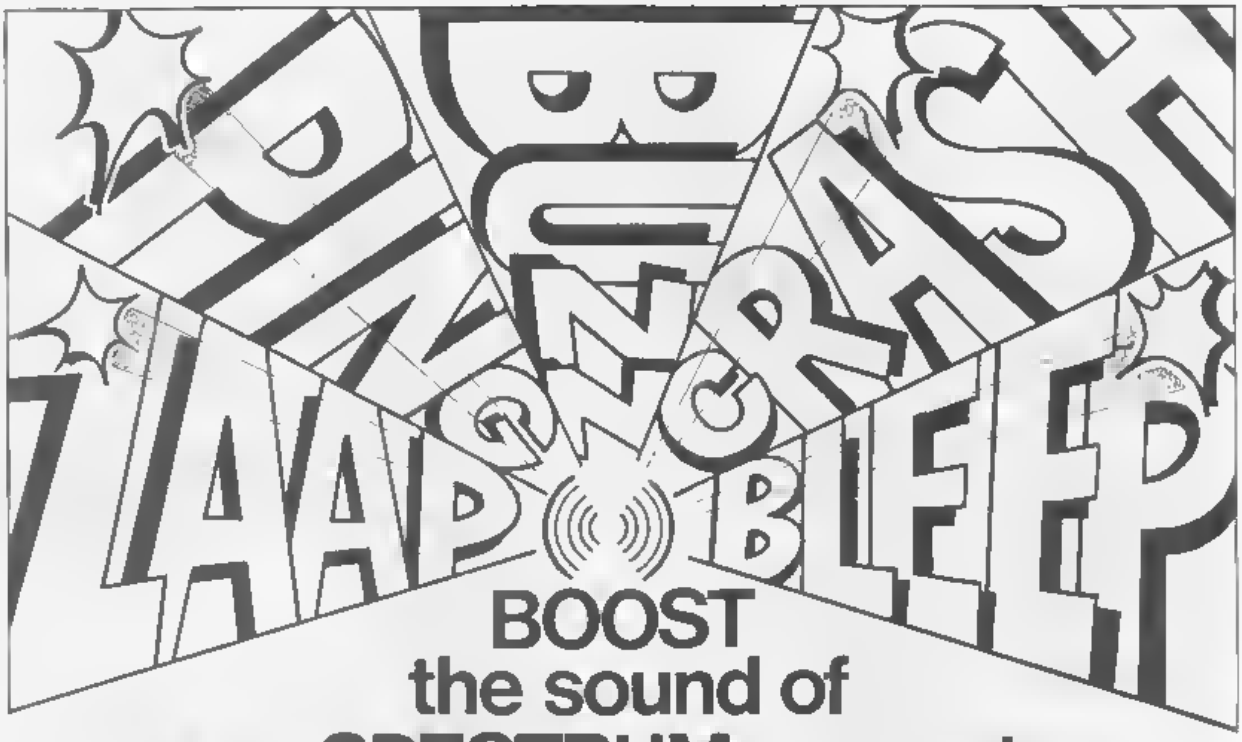

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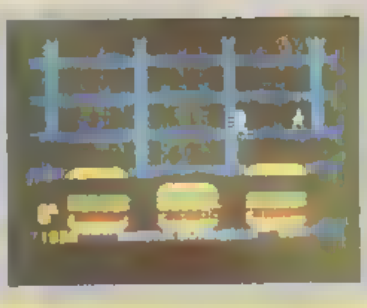


BARMY BURGERS

BEWITCHED

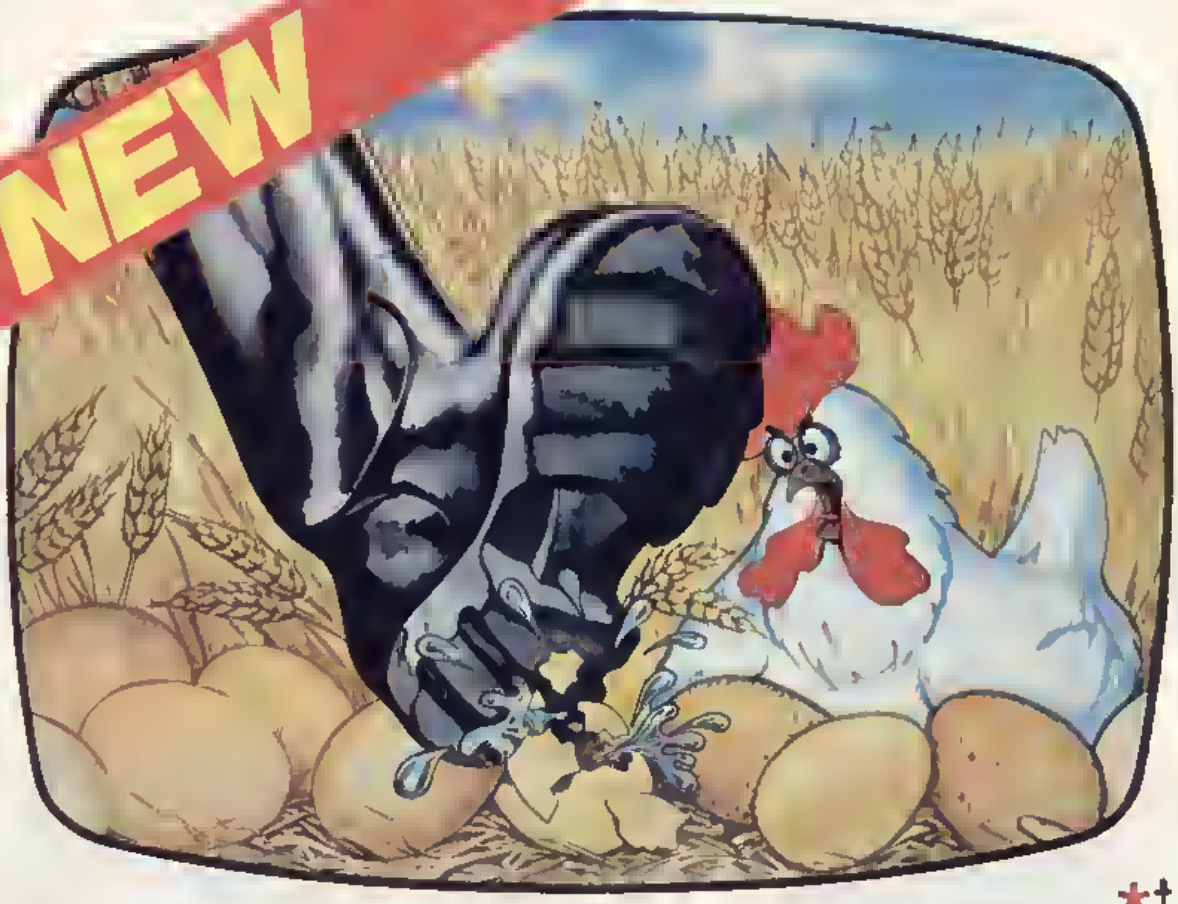
ANT ATTACK

TUTENKHAM

PURPLE TURTLES

Welcome to our new improved reviews section! As you may have noticed we've moved our look at what's new and what's best in the world of games software up to the front of the magazine — where it really belongs. We hope you like the new look. Meanwhile back to the games! Our Game of the Month is Zalaga, a hot space shoot out for the BBC. You'll find our verdict on page 33. We also take a look at a brand new and very original game for the 48k Spectrum called Ant Attack on page 31. Did Imagine's Bewitched cast a spell over *C&VG*'s raviawar? Find out on page 31. Are the Purple Turtles really cute? Take a dive into their world on page 33. If you are a Commodore 64 owner. Fancy yourself as a race ace? Then take the driving seat for Atari's new Pole Position conversion for their 400/800 and 600XL machines on page 31. Barmy Burgers are sizzling away for Spectrum food fans on page 33 and the tomb of Tutenkham awaits Vic-20 owners on page 31. Plus a few more thrown in for good measure as *C&VG* continues its search for the perfect game.

NEW



Amazing Chuckie Egg *† ™

You have to collect 12 eggs and corn to finish the screen — but there are up to 4 nasty ducklings chasing you as you try to escape up the ladders. You can jump onto the moving lifts but make sure you get off before you smash your head against the roof.

The ducklings are on a fixed path but if you're good enough to reach frame 9, mother duck escapes from her golden cage and can move anywhere on the screen.

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PAC-MAN CASTS HIS MAZE SPELL

BEWITCHED

Bewitched didn't cast a spell over this reviewer I'm afraid

I don't really want to put the game down because it has a lot of very good points, but I'm afraid I've had my fill of maze games populated with monsters

The game, as I have said, is set in a maze You are represented by a black key controlled either by keyboard or joystick The joystick option is a much better bet because the game is nigh well impossible using the keyboard

The aim of the game is to open coloured doors in the maze using your key. One small problem here the key must be the same colour as the door Changing the colour of the key involves rushing to the top of the screen and passing through one of the four keys hanging there

Even this doesn't guarantee success because doors often change into bricks in the maze wall.

Once you've opened the door at the bottom of the maze the screen scrolls upwards and you are faced with another expanse of maze to negotiate There are 20 screens in all

Considering the limitations of the unexpanded Vic 20 Bewitched, from Imagine, is quite a feat of programming. Maze games don't appeal to me but if you are a Pac-Man fan then Bewitched could be just your cup of tea

● Getting started	6
● Graphics	8
● Value	5
● Playability	5

RACE ACES WILL LAP THIS UP!

POLE POSITION

Players of one of the year's most popular arcade machines can now sneak in an extra practice lap at home

Following the release of Pole Position for the Atari VCS a few months ago, Atari has now packaged this game for their range of home computers The new cartridge will run on a 400/800 machine and also on the new 600XL.

When you turn on the computer you are greeted with the familiar Pole Position scene The clouds are still overhead and the horizon looms in the distance The road has changed colour, though, from grey to black

There is a choice of four circuits including a practice race for which you don't need to qualify. You can also set the race distance to anything between one and eight laps

When you press Start, the Atari balloon pulls the "Prepare to Qualify" message across the sky There is no speech in this version, however

One of the most spectacular pieces of graphics programming from arcade Pole Position are the advertising boards which whizz past. Those start in the distance as small specks on the horizon and get larger as they approach The lettering and pictures on them gradually become more readable

Unfortunately, although the boards have been transferred to this cartridge, the writing has not. They are completely blank which makes me question their importance to the game

There is no accelerator in Pole Position. The car has a high and low gear which you can change between at will by either pushing or pulling the joystick Direction control is with the left and right movement of the stick, and the fire button acts as a brake

Although this system is quite usable it cannot compare to the large steering wheel which controls the original.

At the top of the screen a timer ticks slowly down to zero If you can finish a lap before it does so, you have qualified for the race proper You are then lined up for the start along with five other cars

There are not really that many other cars on the circuit to avoid, compared to Activision's new Enduro game for the VCS where the object is to pass 300 cars in a certain time

However, this is an excellent implementation of the original and I enjoyed playing it The car graphics were a little unclear, but generally the game is very playable Certainly worth the standard Atari £29 95 price tag

● Getting started	8
● Graphics	9
● Value	8
● Playability	8

FINE TIME IN TOMBS OF TUT!

TUTANKHAM

Tutankham burst onto the arcade scene two years ago with all the promise of becoming a real ten pence piece guzzler.

It was the first game that effectively combined the elements of an adventure game with frenetic shoot 'em up gameplay. You play the part of Archie the archeologist searching King Tut's tomb for long lost treasure

The treasure is protected by the mystical guardians of the tomb These are an evil assortment of snakes, death dragons, crows, bats and flying cats against which your only defence is a laser gun with a limited amount of power

The laser is only charged for a limited amount of time so you must find all the treasure and get onto the next tomb before this runs out

You have five Archives with which you must penetrate the sixteen levels of the tomb This is not easy and should keep you busy for several hours — I only managed to get to the third tomb after several turns

The treasure itself is graphically superb from the red ruby rings belonging to Queen Nefertiti, blue sapphire studded amulets, to the most coveted treasure of all — the Death Mask of Tutenkham.

As you explore the corridors of the tomb certain artifacts will appear that you will need to proceed like the map which shows you the way through the entire tomb, or the key which you will need to get through the doors connecting certain stages of the tomb.

Tutankham is a superb piece of software for the Vic-20 amidst the plethora of mediocre and poor quality titles being touted for this machine

The game is available on cartridge form from Parker Brothers at a slightly prohibitive £29 95

● Getting started	9
● Graphics	8
● Value	5
● Playability	8

AWESOME ANTS LEAP TO THE ATTACK!

ANT ATTACK

Holding my breath, I climbed over the wall and into the city Good not an ant in sight Spotting a lone figure on a pile of rubble and guided by her cries of "My Hero — take me away from all this" I started to lead her to safety In milliseconds we were surrounded by an army of the nasty biting creatures and were eaten alive!

The deserted streets of Antescher are patrolled by hoards of man-eating giant ants who, guided by the scent of humans come charging to the kill. It is your job to get into the city rescue the lone survivor and lead her out of danger

Leaping and running from building to building is the safest way to search for the heroine as the ants can't reach you when you're perched safely above them

Clustering around you in groups, you can blast them with a supply of grenades you carry — this will kill them but more soon come to take their place

A scanner which flashes red

continued on page 33

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The Bath Computer Centre Tel (0225) 334659

The Newbury Computer Centre Tel (0635) 41929

Continued from page 31

or green tells you in which direction to search — a useful addition to the game as only a section of the city is shown on screen at any one time. The screen scrolls in whichever direction you move eventually revealing the furthest reaches of the city.

An additional feature to the game is the power to view your hero from four angles. Occasionally he'll disappear from the screen and to keep track of him, run through all the different view angles which will bring him back on screen.

Another interesting effect is the 3D graphics. If you run behind a building you'll disappear from sight as will the pursuing ants. Cries of "Bitten" will appear on screen once the ants close in and if you don't want to be eaten alive you'll have to make a run for it.

In each new level you have to search further afield for the heroine and of course there is a much greater chance of getting caught as you try to find your way out of the maze of buildings.

The ants are horrifyingly life like as are the movements of your hero. The keyboard controls on the Spectrum are very well placed to enable the easy movement of your hero. Ant Attack is written in machine code and features high-res graphics which are among the best I've seen on the Spectrum, with hidden line removal.

Ant Attack is available from Hampshire-based Quicksilva for the 48k Spectrum at £6.95.

● Getting started	7
● Graphics	9
● Playability	7
● Value	7

BURGER TIME FOR FAST FOOD ADDICTS!

BARMY BURGERS

It's about time someone started a Society for the Prevention of Cruelty to Chefs' now that Burgertime is also available on a Spectrum.

Once again our intrepid hero is faced with the daunting task of completing the hamburgers.

The object of Burgertime, in case you've forgotten already, is to help the chef to make four burgers, which are displayed in layers on the screen and form walkways for the Chef.

Walking over a layer makes it drop down onto the waiting bun below. You are chased around the screen by a vicious fried egg and a couple of mean sausages.

Defence against these meanies comes in the form of a pepper pot which has five shakes left in it. Peppering a nasty will paralyse it for a few seconds while you make your getaway.

This version for the Spectrum features three burgers instead of four, but the screen layout is still good.

The most annoying point about the entire game was the awkward layout of the movement keys. The game uses the cursor movement keys for control which can be confusing.

There are no bags of fries to collect in this game. These are available on the original and are useful as they boost your dwindling supply of pepper.

The version of this program currently available in the shops is version two, which has better graphics for the Chef, a title screen while loading and also a better routine for peppering.

After playing version one, which we have in the *C&VG* office, there are a couple of things which I think should have gone in version two. Firstly, all action stops while a layer of burger drops down a level, which can be annoying. There is also an awful mistake in the spelling of the game title itself which remains on screen at all times while you are playing. When I phoned Bleby about this and asked whether it had been corrected, they told me that nobody had noticed it before and that I was the first to complain.

Apart from all this, Barmy Burgers is a good game for any Spectrum-owning Burgertime fan. The cassette, from Bleby Computer Games, runs on a 48k machine and is available from W.H.Smiths. It costs £5.95.

● Getting started	9
● Graphics	9
● Value	8
● Playability	7

IT'S SHELL SHOCK ON FRUIT MISSION!

PURPLE TURTLES

With baited breath I stepped gingerly on to the turtle's back — suddenly it dived and with a loud splash I landed in the drink!

Purple Turtles is one of the cutest games I've seen for a long time. The object is simple — just cross the river, using the turtles as stepping stones, to retrieve the fallen fruit on the opposite bank.

However, life isn't always easy and in this case danger lurks with every step. The passive floating turtles are often overcome with a sudden urge to dive just when you are standing on them!

Once on the opposite bank, your man picks up a piece of fruit and retraces his steps across the river to a very hungry owl, sitting in his tree he gives you a rapturous hooting welcome! There are five pieces of fruit to retrieve in each level plus a time limit to contend with.

Each successive level becomes a little harder as more than one turtle will dive at the same time. Unfortunately, you can't change direction in mid-jump and so if a turtle dives you've had it!

There are nine difficulty settings and nine speed settings which make a dramatic difference to the game. I found it impossible on the high difficulty settings to jump my little man safely across the river as at some point all the turtles are under water at the same time.

Both the sound effects and graphics are excellent with a constant change of scenery in the background and all accompanied by a very catchy jingle.

Although not a game to set the adrenalin flowing, Purple Turtles has a certain addictive quality and I found it very enjoyable to play.

With keyboard or joystick control for the Commodore 64, Purple Turtles is available from Manchester-based Quicksilva for £7.95.

● Getting started	7
● Graphics	9
● Value	5
● Playability	6

TRUE TO THE ARCADE ORIGINAL

ZALAGA

Aardvark Software have come up trumps with their version of the arcade game Galaga.

Galaga, is based on a Galaxians theme but one that has been beautifully reworked to produce a game that's full of fast and furious action.

Aardvark's Zalaga remains true to the arcade original — apart from the name change. Nothing has been missed, not even the amazingly detailed graphics or the twinkling stars in the background.

The game begins with squadrons of aliens streaming past your laser base into formation. At this stage you can blast away without fear of retaliation, but once the creatures are in position they fire and dive at your base without warning.

Doubling your fire power is achieved by manoeuvring the ship under a ray that one of the meanies occasionally sends

Continued on page 37

the K size of the microchip memory the better the machine

With CBS ColecoVision the superior 32K ROM memory gives you faster speed of play

The greatest number of different screens or changing pictures to tax your abilities.

Plus more moving objects on screen to battle through.

Then there's the unique CBS ColecoVision additional video memory that gives better graphic definition and exceptional colour.

But if you find all this jargon a lot to handle, get to grips with games like Donkey Kong or Zaxxon on our system at your local dealer and you'll get the full picture.

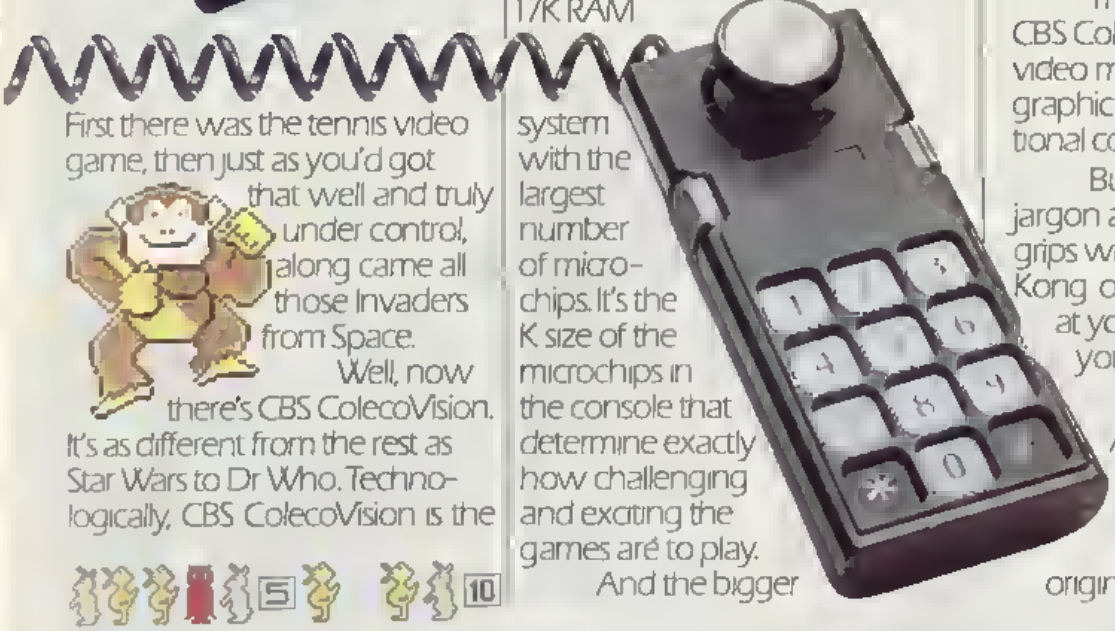
A bigger challenge

As you might expect, our range of games is just as advanced as our console. They're just like the original arcade games.

most advanced, sophisticated video game system available.

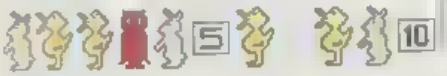
To start with it's a 32K ROM 17K RAM system with the largest number of micro-chips. It's the K size of the microchips in the console that determine exactly how challenging and exciting the games are to play.

And the bigger



First there was the tennis video game, then just as you'd got that well and truly under control, along came all those Invaders from Space.

Well, now there's CBS ColecoVision. It's as different from the rest as Star Wars to Dr Who. Technologically, CBS ColecoVision is the



CBS COLECOVISION. A NEW GENERATION

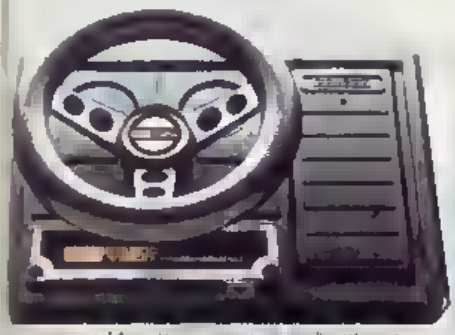
YOU CAN'T BEAT THE SYSTEM

Chosen from the most successful arcade games presently played in the States. No-one else can claim that.

Every single game has up to 4 skill levels for 1 to 2 players plus multiple screens.

So even know-all game wizards are in for some hairy experiences.

There are Donkey Kong, Zaxxon, Smurf, Cosmic Avenger, Carnival, Venture, Wizard of Wor, Gorf, Mousetrap and Ladybug. All demonly difficult. Definitely



not for those with dodgy digits or weedy reactions.

More control at hand. The CBS ColecoVision hand controls are also specially designed to complement the games.

They give you full control over your game play with 8 direction joy stick, push button keyboard and two independent fire/action buttons.

And more. The unique CBS ColecoVision Expansion

Module Interface allows you to expand the use of your console and keep it right up to date with the latest developments.

Expansion Module No. 1 allows you to play the entire

library of Atari VCS cartridges.

Expansion Module No. 2 is a fully functional driving unit which includes steering wheel, dashboard and accelerator pedal.

It comes with the Turbo video game cartridge for exciting high speed racing.

And Expansion Module No. 3 (soon to be launched) will turn your CBS ColecoVision console into an advanced home computer, so you can tackle anything from maths homework upwards.

Whichever way you look at it, CBS ColecoVision is simply the most advanced video games computer system you can lay your hands on. On this planet, certainly.

So go and try one out at your nearest video games dealer

NN VIDEO GAME COMPUTER SYSTEMS.

The Lightening Oric Assembler. £9.90*

There are other assembler/editors available for the ORIC but none combine the same features and ease of use that we have obtained with this comprehensive utility program for the ORIC 48K. The manual which accompanies the assembler gives a brief insight into machine code and the use of assemblers to enable anyone to write in assembly language after just a little study. Full specifications of the assembler cannot be fitted into the small space available here and so they may be obtained from your local dealer or direct from Mr. Micro.

*Includes comprehensive instructions booklet.

Crazy Golf £6.90
48K Spectrum

Crazy golf is a new program for the 48K Spectrum you are required to clear the course avoiding and circumventing the many strange obstacles finally putting your ball in the hole. The par for each hole is displayed and a novel direction indicator combined with a force indicator enable you to hand the golf ball in the direction you feel is the best one to clear the course. Crazy golf really is crazy but must of all it is fun and will be found to be very enjoyable by all members of the family.

For use with Joystick and keyboard.

Bengo £6.90
Vic 20

An exciting program for the unexpanded Vic 20, which combines fast moving strategy and reflex skills. You must control Bengo the super Eskimo against the dreadful snow Yeti — Half blind and half witted the Yeti can smell a good Eskimo lunch — the only protection Bengo has is to hurl huge blocks of ice across the frozen waste at the Yeti.

— Don't get distracted — or you'll be personally responsible for the demise of an Eskimo!

For use with Joystick.

Dracula £8.90
48K ORIC

A superb adventure for the 48K ORIC. This adventure is written in the good old style! No silly graphics, no gratuitous drawings, no distractions from pure mental images of horrendous realism. This evocative text adventure of the old genre will have Oric owners shivering with anticipation and perhaps fear.

Dare you load DRACULA into your ORIC 48.?!

By keyboard.

No shocks — Plenty of surprises!

Mr. Micro means programs you can trust. Programs that are as exciting when you load them as they look at your dealer. Programs that come proven and refined. Programs that bring you the breathtaking excitement of arcade games with the special extra dimension of real mental challenges — all at the right price. Plus accessories and utilities which extend the value of your computer. Ask for Mr. Micro by name at your local dealer. Or order your games direct, post-free, from: Mr. Micro Ltd. 69 Partington Lane, Swinton, Manchester M27 3AL. Cheques should be made payable to Mr. Micro Limited. Ring our 24 hour hot line for payment by Access or Visa on: 061-728 2282.

Amigo £6.90
Vic 20 8K or 16K expansion.

Hey Amigo you gotta run fast eh. The banditos they are a chasing you and they will a get you if you do nota escapa OK. You musta rung rounda the blocks, when you run roundate corners ola de olay the bandits they are frightened to go there and you score de points. Play you have nota gota gun but a joystick can be fun.

For use with Joystick.

Digger £6.90
Vic 20 8K or 16K expansion

Your remote viewer shows the path of the professors devilish digging apparatus. Using your computer linked remote control you must guide the digger beneath the earth to collect the rare micronite gems. Unfortunately the micronite is protected by the micronite who will plague your machine in order to attempt to stop its progress. You may be able to kill the micronite by skillfully manoeuvering your digger beneath a subterranean stalactite which will then fall killing any micronit in its path. This is a novel implementation of a popular arcade game. For use with Joystick.

Humphrey £6.90
Vic 20 BBC Model B

This new game for the BBC Model B or for the VIC 20 (8K or 16K expansion) and also for C.B.M. 64 involves some tricky decision taking.

Object of game is to make Humphrey land on all the cubes thus changing their colour. Unfortunately Humphrey is being chased by a bouncing ATOMIC BOMB! You will soon learn that this deceptively simple game has tremendous addictive properties and quite a high degree of tactical skill.

For use with keyboard or Joystick.

Mysterious Island £9.90
Vic 20 16K

Escape from prison in a hot air balloon — try to land it on Mysterious Island, then the fun really begins. ● Booby Trapped Fields ● Killer Bears ● Hostile Natives ● Hidden Clues ● Fence Fields ● Capture the Nautilus ● Full Graphic Display ● Several Games lead to Exciting Climax ● Separate Practice Program ● Includes Blank Data Tape to store the game to play later.

All successful adventurers can claim a unique personalised award by sending Mr. Micro their final position at the end of the game — By Joystick or keyboard.

RAMDAM £13.90
Vic 20

This accessory enables programs which would normally only work with 5K expansion to work with 8K or 16K expansion. RAMDAM saves having to buy a 5K pack if you already with an 8K or 16K. With RAMDAM and a Commodore 16K expansion all known tape games will run on your Vic 20. ● Includes Memory Test Program ● Free 6-5K game — MICROMAGGOTS for use with Joysticks.

Punchy £6.90
Spectrum 48K

Punch has taken Judy for his evil purposes and locked her away. Judy has called upon the forces of goodness to escape, so with the help of our hero Bobby the policeman and you the purchaser of this fine program you must guide brave Bobby across the stage to rescue poor Judy. Leap the gaps. Jump over the dogs. Leap the alligator pit. Dodge the tomatoes. Rock the crib. Collect the sausages and finally rescue Judy. By Kempstone joystick or keyboard.

Dragon Tamer £9.90
Dragon 32

Allows Atari type and other digital joysticks to be used with the Dragon — giving better response and more control. For the first time your Dragon will be able to reflect your true skills. ● Achieve higher games scores ● Less Frustration.

Plus To ensure maximum value, Dragon Tamer includes two original games for use with digital Joysticks.

Goldrush £6.90
Vic 20 3-5K

This graphic adventure program was the first in the world to offer real gold for the successful adventurer. An idea which has been much copied but never equalled. ● Fun ● Educational ● Challenging ● Clues ● Puzzles ● Searches ● Fast Reaction Game. For use with keyboard.

continued from page 33

down. This links up two bases but this never lasts long because it's difficult enough to keep one base out of trouble let alone two.

The game climaxes with a challenging stage where an army of Zalagans swirl across the screen. Sharp shooting is rewarded by big bonuses.

I can recommend Zalga without any hesitation. I rate it as one of the best shoot-em-ups on the market and well worth your attention.

Zalega is for the BBC 32k machine and is available from Essex based Aardvark Software costing £6.90.

Getting started	8
Graphics	8
Value	9
Playability	9

GALAXIANS HAVE GONE BATTY!

BAT ATTACK

Galaxians have gone batty with squadrons of galactic flying bats! The layout is a five by six formation of galactic bats that swoop down dropping bombs.

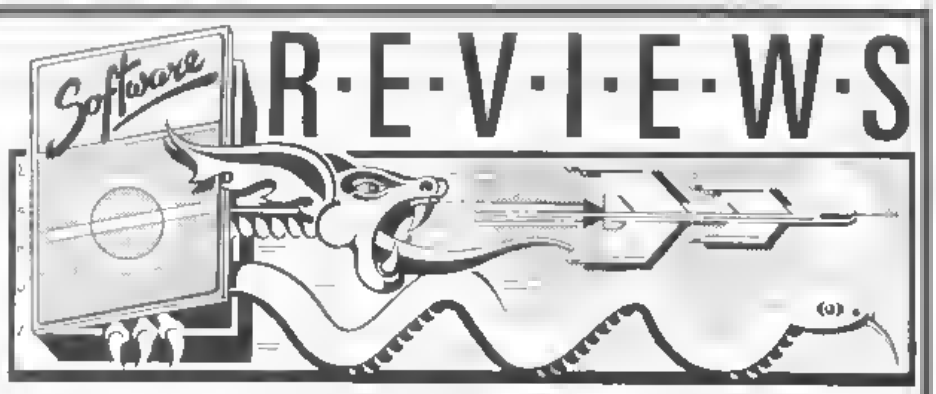
Your task is to destroy the fleet without losing all of your initial three lives. About 75% of the graphics screen is donated to the playing window.

Along the side is panled your score, hi-score, remaining ships and current level. Your ship's movement is controlled not by joystick but by the keyboard keys "Z" and "X" for direction, and the shift key to fire missiles.

As the game starts, the bats flutter and small attack wave formations swoop down. The implied diving motion is very simple, not up to the usual intricate patterns incorporated into some of the other Galaxian type games.

The ship's movement is also very bad being far too slow. The rather large and slow missiles launched from the protector ship move in dead straight lines. I tried to "curve" the shot by moving while shooting, but this had no effect.

Once a screen of bats had been completed, a rather raucous space ship sound occurred followed by a series of flying "donghnuts"! This is where C&VG's bug hunting device activated itself to disclose a stupid bug.



Bombs from the previous screen in the process of falling were not cleared, but frozen and displayed in the subsequent screen.

You can't blast the "doughnuts" — you just have to dodge. This is very difficult — and sometimes impossible if a horizontal string of donghnuts is descending!

Another annoying characteristic of this screen is that two ship width sized margins are imposed on the left and right of the playing area — restricting movement.

Apart from that, the "doughnuts" do have very realistic spinning simulations. After this, the next level ensues with faster and more difficult action, alternating between flying bat and spinning "doughnut" screens!

Bat Attack is available from Sheffield based Alligata (Superior Systems), for the Commodore 64, at £7.95.

Getting started	8
Graphics	6
Playability	7
Value	6

STRANGE, THESE QUARKS

STIX

One unique arcade game that never really took off in the arcades is Stix.

The "Stix" is a bundle of energy, represented by elaborate graphics lines that whizz round the screen. Your job is to harness the stix avoiding destruction. This object is achieved by filling 75% (or more) of the screen, avoiding the hazards that lurk.

You control the construction of the force field synthesiser by use of joystick, creating squares, rectangles and other shapes within the force field perimeter.

Each block or shape created restricts the movement of the stix giving you more opportunity to corral it — for maximum points. When a field has been constructed, it is automatically shaded. On the larger areas, this process is rather slow, using a "FILL" command.

There are two speeds in which construction can be made. These are accessed with the joystick fire button either pressed or not, and are visibly differentiated by red or blue shadings — on earlier levels. The slow speed doubles your points but increases risk of being wiped out by the Stix.

As mentioned, there are certain hazards to beware of. If the Stix touches a partially constructed field, it will be destroyed due to the molecular transposition! Some nasty looking qnarks and anti-quarks patrol the force field perimeter devestating everything in their path! The third hazard is unfortunately a software design fault, which the manufacturers have admitted to and promised to rectify in later production! The problem is that any hesitation whatseever while constructing a field, results in a rippling wave to penetrate the field, following your construction field directions, and annihilating the synthesiser. However this can be avoided by finishing construction before the wave gets to you!

I found the movement of the synthesiser awkward at the top left hand corner of the field perimeter. Once a screen has been completed, consequent levels ensue with faster, more complex action.

Although the game was exciting to play, I feel this particular version will have to iron out its mentioned defects to become a games players' favourite.

Stix is available from Supersoft for the Commodore-64 computer, at £8.00, plus VAT.

Getting started	8
Graphics	7
Value	7
Playability	8

MAD MAX TAKES TO THE AIR

BLUE MAX

It's a case of Reach for the Skies in this Battle of Britain game for the Atari.

You play the part of Max Chatsworth, known to friends and enemies alike as the Blue Max. Your mission is to rid the skies of danger, and generally to make the world a safer place to live in.

Once the game has loaded, pressing the start key will clear the screen to show your plane and the runway. Your aircraft is quite small, made up from just one character.

The plane will taxi automatically and you must take off before you reach the end of the runway. You cannot leave the ground unless your speed is over 100 mph.

Once airborne, you must destroy the enemy cities below. You have 30 bombs and an unlimited supply of bullets. Bullets are fired by pressing the button on the joystick, and if you pull back on the trigger at the same time than you will drop a bomb.

If you pass over a friendly runway then you can land on it. In fact you will have to land to have your tanks refuelled and your bomb store replenished.

Landing is not too difficult, as long as you can remember to come down slowly.

There is a number of options which you can select to make the game easier to control. For example you can reverse the controls on the joystick so that pulling up will make you either climb or dive. You can also introduce gravity so that releasing the joystick will cause you to dive instead of just hovering.

If you like the idea of a game based on the Battle of Britain

continued on page 39

martech games ...a spectacular range of software

BLASTERMIND
SPECTRUM 48k £5.50

At first glance this might seem to be just another version of a very popular game How wrong can you be!!! True the start is simple enough The Spectrum picks a code of numbers or colours with a selection of levels of difficulty — and invites you to do the same You then take it in turns to guess each others code from the clue supplied after each guess An extremely well written fast and very clearly displayed game with almost inevitable defeat

This was exactly as intended but unfortunately *something went wrong* During the programming strange uncomplimentary messages began to appear on the screen At first they were so few they were not taken too seriously but soon they could no longer be ignored Somehow the Spectrum had been given a personality — a rather devious supercilious, dislikeable, hateful horrible mind

✱ Side B contains a version of the game compatible with the excellent Currah µSpeech unit — even worse!! ✱

THE QUEST OF MERRAVID
VIC 20 (16k) £7.95
or Commodore 64 £7.95

A really challenging and enjoyable adventure written by a confirmed adventure addict who grew tired of the ease with which he solved other adventures himself Will accept and act on sentences containing up to nine words

The adventurer becomes Merravid, charged with the task of finding taking and then returning the magic Firestone of the Dwarves However, overcoming the many novel and original hazards is no easy matter Careful and imaginative thought is required if progress is to be made and the Firestone tracked down to the lair of the Dragon of Thargon Even then the Dragon has to be defeated and the stone retrieved A compulsive extremely enjoyable and very user friendly adventure

HARRIER ATTACK
any ORIC - 1 £6.95
any SPECTRUM £5.50

Pure machine code super fast action-packed highly addictive arcade-style game requiring great skill The harrier takes-off from an aircraft carrier and flys over seaborne defenses to attack enemy installations on a nearby island The harrier may fly faster, slower, higher or lower, and has bombs and cannon fire with which to protect itself and make its own attack If it flies too high it is detected by enemy jet-fighters (which it may counter attack) — so it needs to hug the mountainous terrain which also varies with every new game But the island is heavily defended by anti-aircraft rockets and tanks, which again the harrier may counter attack or try to fly through A tally is kept of fuel speed, altitude, ammunition, plus player score and high score Finally the harrier must make its bomb-run over the enemy base before returning past more hostile shipping to its own carrier

SCUBA DIVE
any ORIC - 1 £6.95
SPECTRUM 48k £5.50

Pure machine code with super cartoon graphics You are in control of a diver who must swim down through jellyfish, sharks barracuda and a host of other under sea nasties to locate the entrance of a submarine cave He must then follow its twisting and branching passages which change with every new game to locate the magical giant oysters with their fabulous treasure of enormous pearls Many of the passages lead to dead-ends while some are filled with horrible underwater monsters Each dive has to be timed carefully so that there is enough oxygen left for the return journey which is further frustrated by the diver's boat shifting anchor and threatening to decapitate him with its propellor This game which features three divers player score high score, hall of fame and sound effects, presents perhaps the ultimate epic arcade adventure

ALSO AVAILABLE

JUNGLE TROUBLES — frustrating, addictive, funny, silly Come back Tarzan — all is forgiven! SPECTRUM £5 50
GALAXY 5 — five games on one tape for any ORIC - 1 £6 95
STARFIGHTER — Strategic arcade action Pure machine code for any ORIC-1 £6 95

Most games available from
W H Smith, Laskys, Greens, Boots, Spectrum Centres, Martins, Computer for All Shops and many other retail outlets

Prices include VAT, Post and Packing

Mail order to: MARTECH HOUSE, BAY TERRACE, PEVENSEY BAY, EAST SUSSEX BN24 6EE
Telephone: (0323) 768456 Telex: 87465 EXIM Brighton

continued from page 37

then you'll enjoy playing Blue Max. If the whole idea isn't your cup of tea then you'll easily find another program to spend £29.95 on. Blue Max runs in 32k on an Atari 400 or 800.

Getting started	8
Graphics	8
Value	8
Playability	8

CAUGHT OUT ON THE GRID!

GRIDRUNNER

One of the first arcade games to be available for the Commodore 64 has now been transferred to the Spectrum.

Designed by Jeff Minter, this Spectrum version is written by Salamander and marketed by Quicksilva!

Confused? You won't be .. Read on.

Gridrunner is similar to Atari's Centipede, but set on a grid of squares which covers the screen. There is also a computer-controlled laser which shoots at random from the side of the playing area.

The idea is to destroy the animal, but it splits into pieces as you shoot, until the screen is full of small aliens sweeping down towards you.

The game runs on a 16 or 48K machine. When the tape has loaded, the screen shows the title of the game and the current high score. There are no instructions printed on the cassette inlay, so I had to press every key to find out what to do next. The O key is used to start, while O, A, I and P are used for movement. This is a lot easier than the 4 cursor keys as used on many other games.

The graphics are excellent, and are as good as if not better than those on the 64 version.

The Centipede splits into a number of fragments, each of which seems to rotate on its own. Movement is very fast, and the game is quite difficult to play. All in all Gridrunner from Quicksilva is quite an addictive game to play.

The game runs on any Spectrum, and is available from Quicksilva. It costs £6.95.

Getting started	5
Graphics	8
Value	8
Playability	7

GORILLA KEEPS ON CLIMBING!

KONG

Donkey Kong games are as vital to the games players library as Space Invaders and Pacmen. Putting it bluntly, your collection ain't worth a dime unless you've got a tape with a crazy gorilla and cute Italian carpenter battling it out for the hand of a lady.

When buying classic games it's important to get a good version.

Donkey Kong-type games are no exception to this rule and one new micro which will undoubtedly have several versions available is the Commodore 64.

One of the first of these games to come in for the *C&VG* gorilla-bashing test session is Anirog's Kong. The game scores highly on graphics making use of the 64's vivid colours — most arcade-like.

The high standards in graphics were unfortunately not matched in game play. It was very difficult to make Mario jump over the barrels and at various stages in the game the character steadfastly refuses to take running jumps.

The game makes good use of the 64's ability to create very smooth scrolling graphics — the movement of Mario and the apes being very smooth indeed.

It's a pity this smoothness of movement was not matched with more careful animation. This is at its worst in the running motion of Mario who hobbles along as if with a limp.

A reasonable version of the arcade hit although I couldn't help feeling it could have been a lot better. In the shops now at £7.95.

Getting started	8
Graphics	5
Value	5
Playability	5

THE WEIRD GAMES WE PLAY!

POOYAN

I sometimes wonder how much computer programmers and designers drink. Judging by the weird themes and ideas in most computer games these days it must be quite a lot.

Pooyan is definitely one of the new wave of "imaginative" games. Well I'd certainly call parachuting wolves different.

The intrepid wolves leap from a tree top opposite Pooyan, in an attempt to glide down to the ground.

You control Pooyan who sits in a basket dangling by a rope from a cliff top. Your job is to burst the helium balloons the wolves are using, with your trusty bow and arrow, to protect Pooyan's family of piglets.

The wolves aren't defenceless although they will occasionally launch a volley of acorns at Pooyan's basket.

If you let any of the wolves reach the ground they'll climb the ladder next to the rope and try to bite the rope.

Another line of attack you can employ is the magic arrow. This appears at the top of the cliff and disappears rapidly too if you don't get to it quickly. This arrow is much more powerful than usual and can kill several at a time. However it becomes much more difficult in later sheets to collect it as there can be anything up to ten wolves trying to bite the rope.

The first level is completed once you have killed 32 wolves. The next level takes in the Wolves' Lair. The beasts have changed direction and are now being lifted to the top of the cliff. If more than seven reach the top they'll push a rock over the edge which makes a very nasty mess of Pooyan.

I can find absolutely nothing to criticise in Pooyan. The graphics have to rate as one of the best available for the Atari. The game is very playable and addictive. All Atari owners should make an effort to look at Datasoft's Pooyan.

Getting started	8
Graphics	9
Value	8
Playability	9

MAURICE AND THE BIG BOYS!

MAURICE MINOR

Maurice, the Morris Minor took a wrong turning one day while out for a drive. Finding himself in the middle of a Grand Prix instead of a quiet country road, he enters into the spirit of things and takes on the racing cars at their own game.

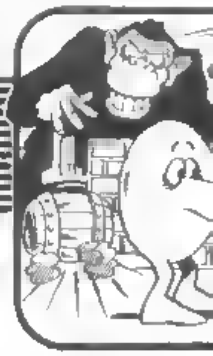
Maurice Minor incorporates six difficulty levels, a display grid showing the level of damage and Hall of Fame.

In each level the speed of the game increases — you could take it easy and start as a Sunday Driver or jump to the other end of the scale as the King Pin where, I assure you, Maurice really shifts!

I found it impossible to get anywhere in the faster levels due to the failings of the Dragon joystick. Maurice is very sluggish in answering the controls and it's impossible to keep him travelling in a straight line.

One real gripe — while we were playing Maurice Minor the program crashed three times for no apparent reason! Maurice Minor is available from Leeds based J Morrison Micros for the Dragon 32 at £6.95.

Getting started	8
Graphics	5
Value	4
Playability	3



COMPUTER OR VIDEO GAMES?

Computer keyboard add-ons are here at last and *C&VG* has got its hands on two of them to test them out before they go into the shops. Will they offer serious competition to the micros?

The VCS keyboard is manufactured by Spectravideo — the makers of the Spectravision range of cartridges. 2k of computer memory can be used to write your own programs — which can then be stored on cassette tape by connecting the VCS to a tape recorder with leads supplied.

The Compumate also has 16k of computer memory built in to perform a number of other functions. These include a music capability which can simulate the sound of piano and organ, has four built in tunes, and enables you to write and edit your own compositions, then play them back or store them on cassette tape.

Also built in is the Magic Easel graphics drawing system which enables you to draw in up to ten colours and run six different screens at a time to create an animation effect.

Main reason for buying a Compumate is to learn to compute and start writing your own programs. The Compumate is ideally suited to do this as it uses the most popular home computer language — Basic.

An instruction manual provides a step by step guide to the keyboard and also takes you through a few simple programs.

The keyboard itself is touch sensitive with cushioned pads that click when depressed to acknowledge the keystroke.

The Compumate sits on top of the VCS and is connected to it through a cartridge which slots from the keyboard into the cartridge port.

All necessary leads are supplied with the Compumate which is available now from Silica Shop at £49.95.

INTELLIVISION DO IT TOO

The Intellivision keyboard is finally here — no less than two years after it was promised to Intel owners. We discover if it was worth the wait.

Despite the delay and if you still want to get into computing and haven't already bought another home computer then the Computer adaptor and keyboard will enable you to do just that.

For your money you get two boxes — a large square box which plugs into the cartridge port and the keyboard itself.

Styled in the same black plastic of the console though with sharper, more angular corners.

The keyboard has full moving keys laid out in standard typewriter fashion.

As with its Atari counterpart — the Computer Adaptor comes complete with Manual. The keyboard also has a built in colour-coded Basic tutor to augment the manual.

Like the Compumate the Intellivision keyboard has 2k of computer memory for writing your own programs. These can be saved on cassette tape by connecting machine to a tape recorder. The recorder also enables you to reload programs into the machine.

The add-on uses a hybrid form of Basic which enables you to access the sophisticated graphics controls of the main console.

The main disadvantage of this is that it takes the beginner away from normal Basic — as employed in other home computers.

For real computer buffs the Mattel Aquarius printer is also compatible with the keyboard if you want to have paper copies of your programs.

The Intellivision keyboard and adaptor are in the shops now at £89.95.

THE SUPER STICKS . . .

The super new Cynex remote control joysticks featured in our July issue have now been slashed in price to a more competitive £34.95.

Originally priced at a hefty £70 the sticks were beyond the reach of most gamers.

The new price at just £5 more than an average cartridge should put the sticks within most people's reach.

Remote control game play has been made possible by the development of a unique radio chip — which enables you to move objects around the screen without wires cluttering up your living room.

In our August issue we asked you to sort out our tumbled joysticks for your chance to win a set of Cynex sticks. And at last we can announce who won!

Lucky winners of our prizes — generously provided by Cynax's UK representatives — Omega Enterprises — are:

Simon Cawley of Keynsham, Peter Evans of Wolverhampton, Philip Hicks of Broxbourne, Herts, Malachy Devlin of Cookstown, Co. Tyrone, Scott Corbett of Aberdeen and Darren Jones of Port Talbot, Wales.

Our eagle eyed winners were the first to spot that of the crossed wires drawn for us by artist Ross Collins. Wire C was the one the bemused player should have chosen to get at his joystick.

Our congratulations to all the winners.

THREE FOR THE COLECO

Stand back . . for the launch of hi-quality, modestly priced video games!

The first will drive you up the wall — or drainpipe — with excitement! You play the role of Frantic Freddy the fire fighting bug! Your inevitable task is to extinguish a series of fires in a multi-story building by firing snowballs through the blazing windows!

One dangerous hazard is the falling fireballs which burn you to death on contact. Each flame takes about five snowballs to put out!

On consecutive levels the action really hots up! You may now climb the drainpipes to higher levels and shoot left or right. If you see two flashing doors you may enter one and reappear out the second!

Several stranded cats on each level appear at the windows and try to jump to safety!

If you don't catch these you will lose one of your three lives — shame you're not a cat! Extinguished flames start to regenerate themselves and wander over the screen in order to smother you to death!

Does anyone like Galaxian-type games with a difference? You do . . well the next two will interest you.

The first — Super Cross Force — shows a hi-res colour graphics display of deep undiscovered space — where no reader has been before. Several planets fill the screen.

You control an infinitely powerful galactic cathode and diode blaster, which when operated causes a deadly high voltage spark to jump across. The terminals are placed top and bottom of the screen. The aliens appear in squadrons wiring and circling in formation attempting to destroy your blaster.

You must dodge the missiles and electrocute invaders as they cross your range. Unfortunately the spark drains your fuel supply. This may be filled by shooting descending parachutists!

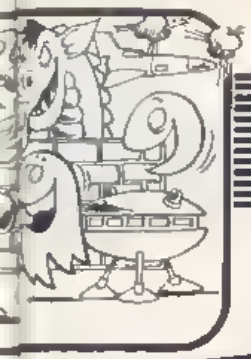
The game incorporates three unusual options, parallel, diagonal and duel. In parallel mode the terminals move simultaneously. Diagonal mode causes terminals to diverge thus producing a diagonal spark. Duel mode is for two players, each controlling one of the terminals!

As usual each consecutive level increases in difficulty as you progress through the game.

The other Galaxian-type game — Spectron — shows a futuristic picture of an Earth defence base. The aliens appear in six by three formation and swoop down dropping bombs on your missile launch area.

Your only protection is a narrow force field which deteriorates under alien attack! Bonus points are scored by hitting the space ship that flies across the top of the screen!

All three games are for one or two players and are available from Silica Shop for the Coleco-Vision system at £19.95 each.



GAMING

TOP TEN		
1	Pole Position	Atari
2	Enduro	Activision
3	Battle Zone	Atari
4	River Raid	Activision
5	Donkey Kong	CBS
6	Galaxians	Atari
7	Tutenkham	Parker Bros.
8	Pitfall	Activision
9	Centipede	Atari
10	Phoenix	Atari

SAVE THE STRANDED MOON MINERS

Moonsweeper, a shoot-em up arcade style game has arrived at last! How long can you survive the attack of marauding aliens while you rescue six stranded miners?

Your aim is to fly a space craft to a distant planet in the outer reaches of the galaxy and rescue six stranded miners who are desperate to start digging on another planet.

Whizzing through space you'll need all your wits about you as you come under attack from alien craft and UFO's who want nothing more than to see you go down in flames. After docking on the miner's planet the pace hots up as you are blasted from all angles.

Using your firepower, blast your way off the planet and enter the time tunnel which will lead you and the miners to safety and the completion of your mission. The game reverts to the beginning at this point but rescuing the miners gets progresaively harder on each new level.

You can accelerate and decelerate your spacecraft by pushing forward and pulling back on the joystick to dodge the aliens.

Moonsweeper should have arrived on the shelves well over a month ago but due to production delays in converting the game to the UK PAL system, the game will now be here by December.

Moonsweeper, by Imagic, for the Atari VCS, will be available from all leading retail outlets at £29.95.

FAREWELL TO SPIKE'S PEAK

Spike's Peak and Ghost Manor, one of the new breed of double-ender cartridges by Xonox was to have been available in the UK by Christmas.

However you won't see the double-enders by Xonox on the shelves this Christmas as K-Tel, the record people will no longer be acting as distributors for the firm in the UK although they are still handling the distribution in the States and Europe.

K-Tel say, "We have decided not to go ahead in the UK." Apparently so many setbacks were experienced in the States with production problems and power conversions that it is unlikely that the cartridges would have arrived in time for Christmas.

In Spikes Peak you pull on your mountain boots become a mountain climber, braving man-eating polar bears, vicious eagles and the ever present danger of landslides and avalanches. Or if the fancy takes you can enter Ghost Manor and try to rescue your friend from the wily clutches of Dracula.

Our reviewers had a sneak preview of these two games — and we're afraid they got a resounding thumbs down from the team!

SOFTWARE PIRACY

In the continuing fight against piracy, Atari has successfully brought another case to the law courts.

The three defendants charged with piracy on October 25th were the latest in a number of people taken to court by Atari over the last few months.

The charges included injunctions to stop the infringement of Atari software and also to stop the defendants passing off any software as the original Atari item. They will also have to deliver up all infringing software and items such as documents, bills and invoices.

The case of software piracy was brought to Atari's notice by adverts placed in magazines and journals.

The adverts offered Atari cartridges and disc based software at a fraction of the retail price. In some cases the games offered had not been released in the UK but were available only in the States.

The result of the case fell in Atari's favour with affidavits being sworn by the defendants undertaking not to copy Atari software. Atari have also been awarded court costs which are likely to be substantial and the defendants have accepted damages which are nominal — £300 to be paid to Atari.

Not wishing to discourage potential programmers, Atari have decided on a softly-softly approach to the problem of piracy. Once a cartridge or disc's protection has been broken, the machine code subroutines of the program can be viewed. There are many who learn in this way by looking at a game's routines and the techniques used to see how the program works.

However, the end result is sometimes misuse with a few people carrying the procedure one step further and copying the games to sell for commercial gain.

Atari's viewpoint is that the copying of a copyright program for whatever reason is illegal and they stated, "As far as the small pirate is concerned, we don't want to use an extremely large amount of muscle to crack a small walnut."

Atari would much prefer to see the time, effort and money used to catch the pirates diverted to more important aspects such as as lowering the price of software.

● What do you think about software piracy? Why not drop us a line and express your views. Write to Mailbag, *Computer and Video Games*, Durrant House, 8 Herbal Hill, London EC1R 5EJ.

COMING SOON!

Who is Professor Video? What is his mission in life? How can he help you get bigger scores when you play your favourite game on your home video game system? Watch these pages for the arrival of the mysterious Professor Video!

PUSH OFF

16/48K SPECTRUM

It's a tough life being a ladybird, being chased by the creepy crawlies in the garden. Luckily you have ammunition to push around and crush your adversaries. Can you survive the first eight screens? Then the game becomes difficult! Spectrum software at its best. 100% machine code fast action

by Andrew Giles

£5.95

McKENSIE

48K SPECTRUM

An adventure for the 48K Spectrum. Answering distress calls from space stations can be very hazardous as you will find out. Lithium crystals, bandits, limited air supply all add to the ingredients of this exciting adventure.

By E. E. K.

£5.95

SOFTWARE PROJECTS

Bear Brand Complex,
Allerton Rd., Woolton, Liverpool,
Merseyside L25 7SF

Crazy Balloon

CRAZY BALLOON
COMMODORE 64

Manoeuvre your hot air balloon around the skies avoiding all the hazards. Pick up bonus points along the way and experience the thrill of flying around in a balloon. 100% high resolution machine code using the CBM 64 at its best. Sorry only 26 levels –
by Chris Loncaster

£7.95

SPACE JOUST
VIC 20 UNEXPANDED

Arcade action for the unexpanded Vic 20. Manoeuvre your space craft around the screen avoiding waves of enemy space ships meanwhile trying to destroy them by landing on them from above, also can you destroy the pods before they return to destroy you.
(Joystick only)
By Ian York

£5.95

DEALER ENQUIRIES TO:
TIGER DISTRIBUTION,
4 VICTORIA ROAD,
WIDNES,
CHESHIRE
051-420 8888

DISTRIBUTORS CONTACT:
SOFTWARE PROJECTS,
BEAR BRAND COMPLEX,
ALLERTON ROAD,
WOOLTON
LIVERPOOL L25 7SF
051-428 7990

WIZARD FUN IN NARZOD!

Vectrex owners are in for hours of thumb numbing action as they seek to penetrate the walls of the Fortress of Nerzod

This game is guaranteed addictive and, if you've got things to do, not to be recomended

Its a big enough strain to stop playing for long enough to write this review — to say nothing of answering the telephone, going to work, or eeting three squere meals a day

The cause of all this trouble is a particularly nasty brood of demons in the employ of the evil wizard — Narzod

Toughest of these henchmen are the Warbirds, Ghouls, and Mystic Hurlers

As the last of the good wizards you must fly your hovercraft into the fortress and destroy the wizard.

The roadway to the castle is divided into four sections each with its own band of creatures

Your hovercraft is capable of rapid fire and you can also bounce the bullets off the walls — but take care as sometimes the bullets can bounce back and hit you

Once you have destroyed all the creatures in one sector, a notice will flash up on the screen — "You May Pass" To do this you take your hovercraft up to the top of the screen with the joystick and through the tiny door to the next level

Each level is tougher than the previous one and you will have to blast your way through four sections to get to the The Fortress

Once inside the fortress you will be bombarded with Spikers from the Mystic Hurler This is the toughest test of all and you will have to register six direct hits on the Mystic Hurler to kill it.

The irresistable attraction of Narzod is due to your curiosity to get into the fortress and get a glimpse of the wizard In the process the game also gives you a super fast shoot 'em up!

THE VERDICT.
The most frenetic shoot 'em up yet on the ever improving Vectrex

- **Action** ⊥⊥⊥⊥
- **Graphics** ⊥⊥⊥
- **Addiction** ⊥⊥⊥⊥
- **Theme** ⊥⊥⊥

DUNGEON CHALLENGE

Dungeons and Dragons takes an evil swist in the Treasure of Tarmin Mattel's D&D games have proved a real hit with intellivision owners and this third cartridge will be no exception

The action takes place inside the tunnels and corridors of the island of Tarmin

Deep inside the fortress lays the priceless treasure — guarded for decedes by the forces of evil.

To recover the treasure you will have to avoid being killed by giant ants, scorpions, snakes, dragons, ghouls and wraiths that inhabit the fortress.

A three dimensional simulation of movement is created as you move down the corridors with doors and walls looming in front of you. Similar to 3D maze games.

Finding you way around the corridors is one of the toughest parts of the game and you would do well to take a tip ont of the Adventure gamers book and keep a pen and paper by your side to note down certain key locations

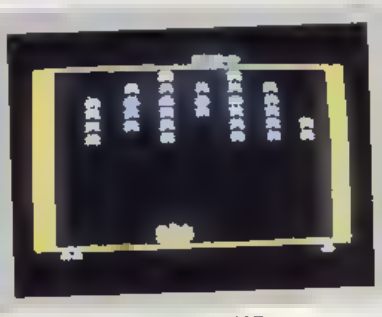
As you travel you will find certain artifects in the corridors which can help you against your enemies

Only six of these can be held In your pack at one time so you must keep a constant check on the suitebility of the objects for each stage of the game

In order to attack you need to be holding a magical item or weapon in your right hand Sometimes these will vanish in battle so it is wise to keep a few weapons in your pack

Each encounter with an enemy will cost you a certain number of points so you have to check your score before and after the fight

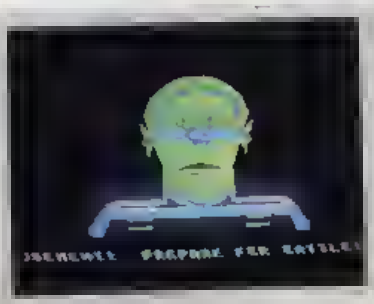
There are some useful items scattered throughout the corridors, as well as all the ghouls, like the ladder — which you can use to climb through into the next



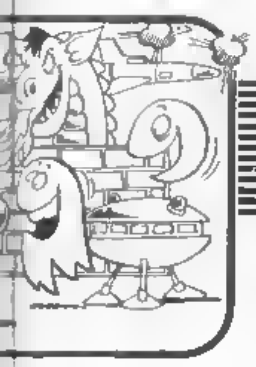
GALAXIANS

TREASURES OF TARMIN

TERRAHAWKS



SPACE FURY



level of the Eye Mural which enables you to see what lies ahead

There is a lot to this game — both in terms of video games fun and intellectual challenge.

For those of you who already own D&D games it is a must but for those of you who don't it is also an excellent game in its own right.

THE VERDICT.
No better Christmas present for an Intellivision owner.

● Action	♟♟♟♟
● Graphics	♟♟♟♟
● Addiction	♟♟♟
● Theme	♟♟♟♟

WELL PLAYED GALAXIANS!

Atari it seems are having trouble finding arcade games to convert for their VCS Galaxians, a new release, although a great game is well past its heyday

Apart from my qualms about the age of the game I think Atari have outdone themselves on Galaxians by producing a top rate game, and I have to admit to being pleased with the vast improvement in the quality of Atari's software over the last 12 months

The game is a straight copy of the original. It has all the different meanies of the real machine and the kamikaze diving actions too. The swooping aliens have a real turn of speed which will test even the most experienced of Galaxian experts.

The display is neat and very colourful. The graphics are close to the arcade machine and fast with none of the awful flickering which spoil Atari's Defender.

One small criticism of the cartridge. In the early stages the game is very easy — but after a while this position is reversed and swarms of aliens are thundering down at your laser base

Galaxians is a classy reproduction of the arcade game and one that deserves to be in all shoot-em-up fans games collections.

THE VERDICT.
Well worth asking Santa to leave a copy of Galaxians in your stocking this Christmas

● Action	♟♟♟♟
● Graphics	♟♟♟
● Addiction	♟♟♟♟
● Theme	♟♟♟

PLAY WITH TERRAHAWKS

Terrahawks is the name of the game — and the name of a new TV series featuring the puppets of Gerry Anderson, the man who brought you Thunderbirds

Philips have signed a deal with Mr Anderson to market games based on the series — and Terrahawks is the first of these cartridges for their G7000 system.

At the launch of the new game Philips owned up that it was being written before someone came up with the idea of linking it to the TV show

But the game has all the ingredients of the show — nasty evil aliens and a brave defence force determined to beat off their attacks

Terrahawks is the first of a new wave of games for the G7000 which are a considerable improvement on what has come before. It's a classic space shoot out — in Galaxians or Space Zombies style

The game starts with Zelda — chief nasty in the TV show — appearing on the screen and launching a wave of ships to attack the Hawknest, the Terrahawks' base. You control one of the Terrahawk ships and blast away at the alien ships which swoop and swarm above you.

As the game progresses each wave of alien ships is armed with more devastating and dangerous weapons to hurl down at the defenders. It begins with clusters of rockets which are fairly easy to blast or avoid. Then come the anti-matter mines which drift down slowly — but have the nasty habit of homing in on your Terrahawk ship

Then little green meanies appear to plague you. These are the Annihilators which race across the bottom of the screen at you if they manage to reach the earth's surface that is. Your best bet is to blast them before they land!

Meanwhile the anti-matter mines and rocket clusters are still falling too!

Zelda's fourth squadron is armed with the deadly Nucleonic Space Mines which zero in on their target

By this time things are getting a bit hectic — and if you live through four screens Zelda begins her invasion again — but the aliens begin to get fiercer with each wave

It's not the most original of games but quite addictive once you get into the swing of things. One small criticism I'd make is that it's difficult to tell when one game ends and another starts

You only get one life so when your base is blasted by an alien that's it. But the only indication that the game is over comes when the score register flips back to zero at the bottom of the screen.

There is a high score register too — which makes playing against a friend a competitive affair.

Overall Terrahawks is a good addition to the range of games for the G7000

THE VERDICT
A basic space shoot out — but none the worse for that.

● Action	♟♟♟
● Graphics	♟♟♟
● Addiction	♟♟♟
● Theme	♟♟

FURY OUT IN SPACE

Space Fury is a very old idea in a new and not altogether successful package.

Shoot-em-up fans will instantly recognise the similarity between Coleco's Space Fury and the legendary Asteroids game, even though there isn't an asteroid in sight

You control the ship by moving left, right and forward as in Asteroids but the moving objects are certainly different, some would say uninteresting.

The game starts with a picture of an alien daring you to do battle with him. Coleco have made a very unconvincing attempt to synchronize the alien's lips with the scrolling message at the bottom of the screen

This ridiculous performance is repeated at the beginning of each and every game. I have to admit the display is novel the first time round but from then on its attraction fades rapidly

Compared with other games for the ColecoVision Space Fury's graphics are abysmal. The first screen start with 15 moving squares which you simply have to shoot. As the level progresses the squares join together to form large diamonds, which sounds sinister but actually makes the game easier to play

The next stage of the game involves docking your ship with one of three mother ships on the screen. You have a limited time to manoeuvre your craft in position, if you fail to dock in the time limit you will lose any bonus you might have gained from the first level

The other two sheets on the first level are similar to the first but the enemy are a different shape

The graphics are so bad it's hard to tell what they're supposed to be, but one set of aliens does bear a resemblance to purple coloured doughnuts

After the first level has been completed further sheets contain mixtures of aliens

When a game finishes the alien appears again and cast his opinion upon your performance. His comments range from an "amusing" to a formidable opponent. To give you some idea how difficult the game is I became a "formidable opponent" within quarter of an hour

Space Fury contains the obligatory catchy tune, but unusually bad graphics for the ColecoVision. It also has the one fault that mars almost all the Coleco games, it's far too easy and fails to present a new challenge to the games player.

Space Fury isn't up to the usual standard of games available for ColecoVision, and when compared to the original Asteroids game it really does tell flat on its face

THE VERDICT.
Give me an old fashioned Asteroids game any day of the week

● Action	♟♟
● Graphics	♟♟
● Addiction	♟♟♟
● Theme	♟♟

COMMODORE 64K

64K RAM Computer
with high-resolution graphics
£199.00

DRAGON 32

32K RAM Computer
with extended Microsoft® colour basic
£175.00 'Special Deal' price (see details below)

BBC microcomputer system

BBC-B 32K RAM Computer
£399.00
(with disk interface £469.00)

BOOTS YOUR HIGH STREET

PERIPHERALS

Cassette Recorder C2N £44.95
Seikosha GP 100VC Printer (including cable) £229.00

SPECIAL DEAL: Commodore Disk Drive *plus* FREE "Easy Script" word processing package (normal R.P. £75) *plus* FREE six-game disk (normal RP £29.70): all for £229.00

SOFTWARE-ENTERTAINMENT

Attack of the Mutant Camels Llamasoft	£7.50
Escape MCP Rabbit	£5.99
Hovver Bovver Llamasoft	£7.50
Frogger Interceptor Micro	£7.00
Pakakuda Rabbit	£5.99
Grandmaster Chess Audiogenic	£17.95
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Purple Turtles Quicksilva	£5.95
Krystals of Zong PSS	£7.95
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SOFTWARE-APPLICATIONS & LEARNING

*Practicalc MMSI	£39.95
Superfont 4.0 English Soft	£6.95
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Introduction to Basic CBM	£14.95

Dragon 32: exclusive Boots deal: Computer *plus* 'Basic Tutorial' 2-cassette pack (normal RP £19.95) *plus* 3 games/adventure cassettes (normal retail value £29.85): all for £175.00

PERIPHERALS

Boots CR 255 Cassette Recorder £21.95
Seikosha GP 100A printer, including cable £229.00
Dragon Disk Drive £275.00

SOFTWARE-ENTERTAINMENT

(Cassette)

Pettigrews Diary–Shards	£7.95
Cuthbert in the Jungle Microdeal	£7.95
Drone–PS L. Marketing	£8.95
Intergalactic Force Microdeal	£7.95
Space Shuttle Simulator Microdeal	£7.95
Dragonfly II–Hewson Cons	£6.95
Ring of Darkness–Wintersoft	£9.95
Franklin's Tomb–Salamander	£9.95
Frogger–Microdeal	£7.95
Air Traffic Controller Microdeal	£7.95

SOFTWARE-APPLICATIONS & LEARNING

Fun to Learn (cass) Shards	£6.95
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*Business Accounts MST (disk £24.95)	cass £19.95
*Mailer/Address Book MST (disk £24.95)	cass £19.95
*Stock Control MST (disk £24.95)	cass £19.95
*DASM/DEMON (cart) Compusense	£34.95
*Edit + (cart) Compusense	£34.95
Dream Assembler (cass) Dragon Data	£10.95

PERIPHERALS

Boots CR 375 Cassette Recorder £29.95 (interface cable £3.75 extra)
Smith Corona TPI daisy-wheel printer including interface cable £399.00
BBC Disk Drive £265.00

SOFTWARE-ENTERTAINMENT

(Cassette)

Galactic Commander Micro Power	£6.95
Rocket Raid Acornsoft	£9.95
Sphinx Adventure Acornsoft	£9.95
Hunchback Superior Soft	£7.95
7.3.7 Simulator Salamander	£9.95
The Hobbit Melbourne House	£14.95
Killer Gorilla Micro Power	£6.95
Felix in the Factory Micro Power	£7.95
Philosophers Quest Acornsoft	£9.95
Space Shuttle Simulator Microdeal	£7.95

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Graphs & Charts Acornsoft	£9.95
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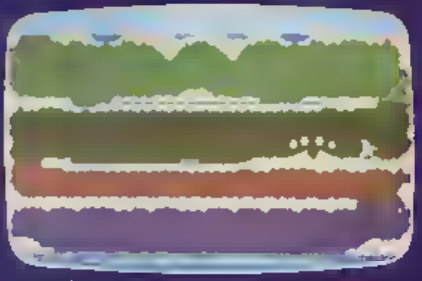

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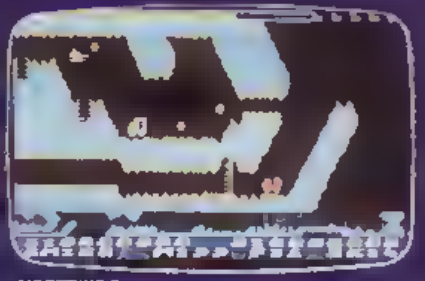

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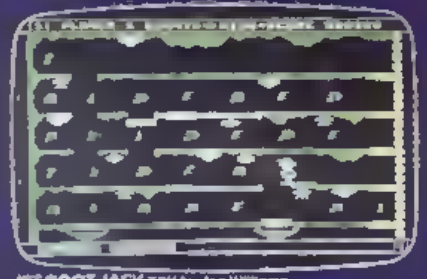

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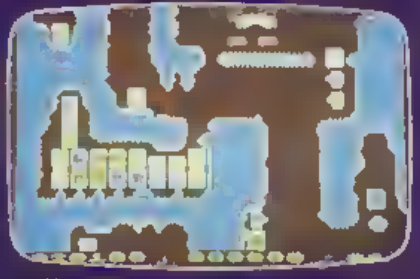

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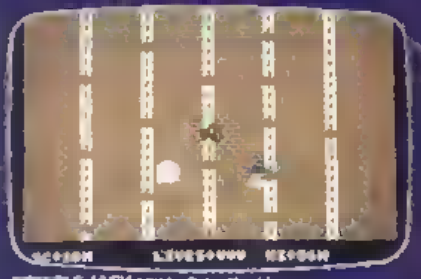

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THE GAMES PLAYERS' GUIDE TO THE MICRO

Our motto at *Computer & Video Games* has always been to advise our readers and save them money by pointing them in the direction of quality and value for money. This Christmas, we present 11 full machine reviews for you to scrutinise, offering advice and more importantly, helping to put your inquisitive minds at rest and make the right decision.

Our reviews, compiled by Richard Frankel, cover the popular machines as well as some of the latest contenders to the home market, which we feel will be successful in the near future. We make an assessment on the famous Atari 400 and 800 as well as revealing Atari's new baby the 600XL. In addition we look at the VIC-20 and CBM-64, the Acorn Electron and BBC, Japan's latest contribution, the Sord M5, and the increasingly popular Oric-1.

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What do home computers mean to you?

Do they conjure up images of '1984' and 'Brave New World'?

Or do you think of them as advanced video games?

The subject is shrouded in myth. One or two of which we hope to clear up (with a little help from the Dragon 32).

Video games are a great introduction to the world of the home computer.

But there's more to them than simply saving the universe.

"THEY'RE JUST A TOY FOR KIDS."

True they can be used as a toy. To prove it we've produced a wide range of high quality software aimed at the games player.

But to use a Dragon simply to play games on is rather like buying a car just to listen to the radio.

So what else is there? Well, there's programming.

We've even produced some software that'll help you master the basics.

Then there's Typing Tutor, a program that's particularly useful on the Dragon 32 thanks to its professional quality keyboard.

In fact our software range has something for just about everyone, from our Young Learning series right through to Computavoice, a program that can actually make your Dragon speak.

Take a look at the sample list provided and you'll see just what we mean.

Computers, like anything else, can seem a little daunting if you don't start right at the beginning.

But, basically, they are logical and easy to understand.

Especially if you start with a home computer that is logical and easy to understand.

Like the Dragon 32.

some aliens, a few myths.

Maybe, though, you want to wait a while.

After all computers are advancing all the time. Aren't they?

True. But there's no point getting very advanced equipment if you don't know how to use it properly.

Besides the Dragon 32 is versatile enough and has a large enough memory to be able to cope with all your family's computing needs for years to come.

"YOU HAVE A FORTUNE TO SPEND A TO GET A 'PROPER' ONE."

The Dragon 32 is a proper computer. As standard it offers a massive memory, together with many functions you'd only expect in a much larger (and more expensive) machine.

Yet it will only set you back £175.*

That's certainly no fortune for a machine with specifications like these.

6809E MICROPROCESSOR. The most powerful eight bit processor available
32K RAM (as standard). At least twice the memory of most similarly priced machines
EXTENDED MICROSOFT COLOR BASIC (as standard) Featuring: ADVANCED GRAPHICS (set, line, circle, paint, print, draw, rotate and print using). ADVANCED SOUND 5 octaves. 255 tones. AUTOMATIC CASSETTE RECORDER CONTROL. FULL EDITING with INSERT and DELETE.
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This is where the Dragon really scores. Our handbook was designed to be easily understood (as was the whole machine), even by people totally new to computers.

"It is better than most, comprehensive and easy to read." (Thank you Personal Computer World.)

So you won't have to keep asking the kids how to use it.

And as computers begin to play a bigger role in our lives, so a knowledge of them becomes more important.

Many schools have already recognised this, and computer studies is commonly taught.

Mind you it'll never have the 'dull' tag attached to it like other subjects, because computers (especially home computers) are great fun.

How else can you save the universe in your own front room?

DRAGON 32

The first family computer.

BBC MICRO

HARDWARE
PROCESSOR BASED 6502
RAM 32K (non expandable)
ROM 32K
POWER SUPPLY internal
R F OUT phono socket
GAME PORTS
A-D CONVERTOR 25 pin connector
VIDEO OUT 5 pin din/phono socket
OTHER CONNECTORS Tube, 1 MHz Bus (for connection to teletext adaptor), Printer, Disc Drive, I/O user port, Econet socket, 5 pin cassette input
KEYBOARD 'Qwerty-style', 74 full travel keys, including 10 function keys
SOUND OUTPUT on board speaker

SOFTWARE
SOUND: four individual channels, 15 amplitude levels, 255 pitch variations, 255 duration lengths. 14 part envelope generator.
BASIC Acorn Structured Basic
USER DEFINED GRAPHICS maximum of 30, 8 × 8 block grids
COLOURS: 8 NORMAL black, red, green, yellow, blue, magenta, cyan, white
8 FLASHING black-white, red-cyan, green-magenta, yellow-blue, blue-yellow, magenta-green, cyan-red, white-black
GRAPHICAL SYMBOLS none

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* Prices correct at time of going to press.

The BBC computer was the machine everyone waited for. And they weren't disappointed! The BBC offers powerful graphics, sound and basic as well as having a good quality keyboard and well documented manual. The machine came in two versions — Model A and Model B. The Model A came in at £300 and the B at £400. The Model A is no longer available so this review deals with the 'B'. The machine now comes with 32k RAM and 32k ROM as standard.

BASIC/GRAPHICS/SOUND

The BBC uses "structured" Basic which is becoming more common on new machines and is considered a more logical approach to programming. For those not familiar with structured Basic, Structured programming eliminates statements like "Goto" and "Gosub". Instead subroutines are named when they are created and can then be called by name as opposed to line number.

Other Structures include IF . . . THEN . . ELSE, ON . . . GOTO(SUB) While . . . Do loop. LISTO will give you a listing where all structured loops are indented for easy identification and neat format. Procedures and functions may be defined using local and neat format. Procedures and functions may be defined local variables, and any reference to a local variable outside its procedure or function results in a "NO SUCH VARIABLE" message. Procedures are defined outside the main program and may be called from inside the main body of the program.

The 6502 based BBC executes Basic programs extremely quickly.

Machine code routines may be executed using either USR or CALL. This will be particularly useful for programs where areas of coding need to be executed at "Basic" speed like text instructions.

Most reserved words may be abreviated i.e. L. for List or P. for Print. This system works for statements as well as direct command entries. Upper and Lower case characters have different values in variables therefore lower case characters can not be used as reserved words.

The text display works in conjunction with the eight graphics modes. The maximum text display is in Mode 0 which will give you 80 × 32 characters, and the minimum — Mode 2 or 5 — which has a 20 × 32 display.

The BBC's graphical capabilities are far superior to any other machine in its price range. There are eight different modes with a maximum resolution of 640 by 256! The co-ordinate 0,0 is in the bottom left hand corner of the screen in all modes. Changing the graphics mode when graphics have been created on a given mode results in the machine replotting the points to fit the new mode. In other words a program that uses graphics will run in any mode and the coarseness of the plotting will adjust accordingly.

Plot v,x,y where v varies from 1 to 88 and x and y are the screen co-ordinates has 88 different options. This may be used for drawing lines, plotting points or even filling in defined areas such as rectangles, triangles or any irregular shape or area.

It is possible to mix the graphics and text windows and set them anywhere on the screen e.g. you could have a graphics window in the centre of the screen surrounded by text.

There are 16 colours available and the ability to change the drawing colour, background and text foreground. Of course, you are restricted to the number of colours allowed on the screen at any one time, depending on the mode in operation. In the text modes it is possible to colour each individual letter as desired.

Generally speaking the higher the resolution the less amount of colours allowed on the screen at any one time.

The BBC's sound generator is phenomenally good. There are four individual channels, 15 amplitude levels, 255 pitch variations and 255 variable durations. If that's not enough to contend with there is a 14 part envelope generator. It is possible to synchronise all four channels to form a chord by marking the appropriate note with the number of channels to play at once. The sound generator techniques may be confusing at first, but once mastered becomes a powerful tool.

KEYBOARD AND CURSOR CONTROL

The keyboard is good quality although slight "play" is apparent on all keys. It is housed in a plastic injection moulded case which is a little on the weak side. While on the subject of the case, it may also be of interest to know that it is not supported at all being impractical to house the monitor or disc drives on the top.

There are 74 keys each with a variable auto repeat feature. Located along the top of the keyboard are ten function keys. These may be used for anything from a simple function to a complex string of commands. They are easy to program too.

For example if you wanted to put "Print Sqr(A)" into function key number two, the

procedure would be as simple as *Key 2 "Print Sqr(A)".

There are three L.E.D.s which light when Caps Lock, Shift Lock and Cassette Motor are in operation.

Editing is unusual. The procedure is to list the appropriate line, use the cursor direction keys to reach the first character and then press the Copy key to produce a direct copy of the line, stopping when an insertion is needed or skipping a character if it is to be deleted.

PERIPHERALS AVAILABLE

Although Acorn supply a cassette recorder for about £26, you may use one of your choice as input is via a seven pin din socket, which can be computer controlled if you have a remote socket.

To load a program you must type "LOAD" or "CHAIN" followed by the file name. You may use "" as the file name to load the next program on the tape. Ease of data transfer is disappointing as one has to judge when the data sound is just right i.e. not too loud or soft and at exactly the right tone. Otherwise when levels are correctly adjusted, data transfer is a reliable source.

Single or double 5.25in disc drives are available from Acorn and retail for around £230 for single and £799 for double sided.

Other extra options available include a teletext receiver, Micronet 800 adaptor, a colour or black & white monitor, dot matrix printer, voice synthesis and even a second 6502 processor — which gives you the ability to "down load" seoftware over the telephone lines and gives you access to Prestel's 250,000 pages. One area that some enterprising manufacturer could look at is a joystick. There are none on the market that really work effectively — but we do have some top secret information that Vulcan Electronics are planning to release a good quality stick soon.

CONCLUSION

The BBC is an extremely versatile and adaptable machine, competitively priced when you take into account all it has to offer. Many high quality, low cost, games exist for the BBC, and you'll find lots of games listings in magazines like C&VG. It's also an ideal machine to start learning on — and it expands with you as you learn. It's advanced enough to cope with the experienced programmer, if you can afford one — go for it!

ACORN ELECTRON

HARDWARE
PROCESSOR BASED: 6502 A
RAM 32K (non expandable)
ROM 32K
POWER SUPPLY: external
R.F. OUT phono socket
GAME PORTS
A-D CONVERTOR 25 pin connector
VIDEO OUT (R.G.B.) 5 pin din
COMPOSITE VIDEO OUT B.N.C.
OTHER CONNECTORS: Edge board expansion connector
KEYBOARD 'Qwerty' style, 56 full travel keys
SOUND OUTPUT on board speaker

SOFTWARE
SOUND: four individual channels, 15 amplitude levels, 255 pitch variations, 255 duration lenghts, 14 part envelope generator
BASIC Acorn Structured Basic
USER DEFINED GRAPHICS maximum of 30 8 × 8 block grids
COLOURS 8 NORMAL black, red, green, yellow, blue, magenta, cyan, white
8 FLASHING black white, red-cyan, green-magenta, yellow-blue, blue yellow, magenta-green, cyan red, white black
GRAPHICAL SYMBOLS none

PRICES AND OTHER OPTIONAL EXTRAS
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ACORN DATA CASSETTE RECORDER £26 (inc. VAT)
GAMES PADDLES (PER PAIR): £11.5 (inc. VAT)

OTHER AVAILABLE LANGUAGES (D=disc, C=cassette)
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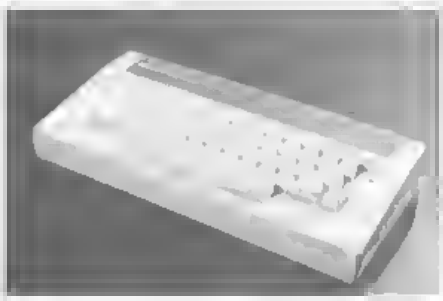

The Electron may appear to some as a revamped model A. Retailing for under £200 and aimed at the Spectrum/Dragon market. Although it is in their price range, it offers superior capabilities.

Many of the BBC's features have been included on one chip on the Electron. Apart from this, there are other features which differentiate the two which we shall examine.

BASIC/GRAPHICS/SOUND

The Basic used by the Electron is almost identical to that on the BBC machine. It is slightly slower than the BBC, but still one of the fastest for its price.

A vast majority of BBC programs run on the Electron requiring little or no detail changes.

The Basic used is "Structured" which still excludes the Structured loop WHILE . . . DO.

Upper and lower case characters are available and hold different values. They are distinguishable in variable names so variables may use reserved words as long as they are in lower case e.g. ID print=1435456. Integer variables have absolute accuracy with a maximum size of 2,147,483,647. Like the BBC, string variables may be a maximum of 255 characters long.

The EVAL statement allows the user to input a numerical function e.g. 10*5/sqr(56), which will be EVALuated by the computer for use within the program if necessary.

Built into the system is an elapsed-time clock which has an assigned variable called TIME. It may be cleared or preset to any value and it is incremented every 1/100 of a second.

This feature is particularly useful for games playing where it may be necessary to time the player for input or reaction. Variables may be defined as 'local' within a procedure or function. Procedures may be defined from outside the program and can easily be called to from inside the main body of the program.

For direct memory manipulation, peek and poke are not used. Instead three operators are introduced. The symbols used are as follows. ?, ! and $. These are used to poke a value into a location or return the existing

value (PEEK) operate peek and poke on four consecutive locations and place a string into memory respectively.

A full set of self explanatory error messages are used, requiring no referencing.

The Electron has ten programmable function keys. These could be used to good effect for commands like "LIST" or "RUN" a complex string of procedures.

For assembly enthusiasts, the Electron allows you to include assembly instructions within the bounds of a basic program for routines that require speed.

The hi-resolution graphics on the Electron are identical to that on the BBC except Mode 7 which, disappointingly, is not present. I say disappointingly as it only uses 1k of memory as opposed to the other modes memory usage of 8k to 20k! Other modes are intact giving you a range from 165 × 256 resolution up to an astonishing 640 × 256 resolution, and a text display ranging from a large charactered 20 × 32 display up to a generous 80 × 32 display — ideal for word processing!

While on the subject of resolution, the Electron — and BBC — have a marvelous unique resolution plotting system. 0,0 is in the left bottom corner with a theoretically 1280 points across and 1024 points upwards, regardless of what mode you are in.

When I say points don't mistake it for resolution, as a DRAW 1279, 1023 in Mode 2 will result in a diagonal line much thicker than the ultra fine diagonal line you will get with DRAW 1279, 1023 in Mode 0.

This system means that graphics created in any of the graphics modes, will also work in any of the other four graphical modes, re-adjusting the design to the available resolution! Now if that seems a little heavy, relax.

All other BBC graphical commands are available like DRAW, PLOT and MOVE, although the ability to scroll graphics sideways is only available through machine code. VDU can be used to redirect text and graphics windows, shade in assigned shapes, redefine characters and much more.

There are 16 colours available — eight normal and eight flashing. These can be used to good effect for drawing colour, background, background and text foreground. The amount of colours available within the various modes, generally decreases as the resolution increases. Text characters may be individually coloured if so desired.

The otherwise sophusticated sound on the Electron is spoilt by the inability to play two or more voices together. There is a 14 parameter part envelope generator.

KEYBOARD AND CURSOR CONTROL

The "QWERTY" style keyboard is really excellent — even better than the BBC's — and in my opinion is the best under £400! There is no 'play' which spoilt the otherwise good quality BBC keyboard and it is very quiet too. There are 56 auto repeat keys altogether — 17 less than the BBC's — of which most have around three functions. On most keys are 'one entry' keywords — like the Spectrum — which are optional — unlike the Spectrum!

These are accessed via the function key. The ten function keys — found separate from the keyboard on the BBC — are combined with the numerical keys 0 to 9. A few other keys found separate on the BBC are combined with other keys on the Electron — which explains its slightly smaller keyboard. Shift lock is missing. The case is beautifully designed and attributes to ones overall good impressions.

Cursor control and editing is also like the BBC. To edit a line, one must move the cursor up to the line with the direction keys, then press the copy key to reproducing a copy of that line at the block cursor — located underneath — stopping for insertions, or skipping unwanted characters. This is not one of my favourite features!

PERIPHERALS

There are sockets for domestic TV, R.G.B. monitor and composite video output. The R.F. output is clear and stable, but if you must have a colour monitor, they retail for around £230. There is no command for picture centring as on the BBC. On my standard colour television the top of the display was lost.

The Electron hasn't got all the output sockets that the Beeb has got so Acorn are planning an expansion box, to which hopefully disc drives, printer and Prestel could be connected. As yet I have no details of whether existing BBC peripherals will be compatible.

It also looks sceptical whether the more serious BBC expansions like extra processor — requiring 'tube' connector.

CONCLUSION

The Electron is an ideal machine for anyone who fancy owning a BBC B — but just can't afford one! It doesn't have the expansion potential of the BBC, but it's certainly a winner in terms of design, power, quality and competitive pricing. Although the Electron is in the lower price bracket it is unfair to compare its abilities to the Spectrum or Atari range. It's simply a superior machine — powerful enough to satisfy the most demanding gamer who wants his micro to do other things as well.

COMMO

HARDWARE
PROCESSOR BASED 6502
RAM 5K (expandable to 32K)
ROM 20K
POWER SUPPLY external
R F OUT. five din socket to external R.F. modulator
GAME PORTS: nine pin Atari compatible
VIDEO OUT five pin din
SERIAL PORT. six pin din
USER I/O. 24 contact, printed circuit connector
MEMORY EXPANSION 44 contact, printed circuit connector
CASSETTE OUT. 12 contact, printed circuit connector
KEYBOARD. Qwerty style, 65 key, full travel
SOUND OUTPUT television speaker

SOFTWARE
TEXT DISPLAY 23 × 22 characters
HI-RESOLUTION 184 × 176
SOUND. four channels (voices) three octaves, 15 volume control settings
BASIC. Commodore 'New Rom' Basic
USER DEFINED GRAPHICS yes
COLOURS: black, white, red, cyan, purple, green, blue, yellow, orange, light orange, pink, light cyan, light purple, light green, light blue, light yellow
GRAPHICAL SYMBOLS 68
*PRICES AND OTHER OPTIONAL EXTRAS
VIC-20 COMPUTER WITH

DORE VIC-20

CASSETTE RECORDER, COMPILATION TAPE AND INTRODUCTION TO BASIC PART 1 - £150 (inc. VAT)
1541 SINGLE DISC DRIVE. £229 (inc VAT)
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DOT MATRIX PRINTER (60 C P.S). £346 (inc. VAT)
COLOUR PRINTER PLOTTER £170 (inc VAT)
COLOUR MONITOR £230 (inc VAT)
16K MEMORY EXPANSION. £39 (inc VAT)
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3K MEMORY EXPANSION: £19 (inc VAT)
SUPER EXPANDER £35 (inc. VAT)
PADDLES £14 (inc VAT)
JOYSTICK £8 (inc. VAT)
VIC WRITER WORD PROCESSOR £25 (disc), £20 (cassette)
*prices correct at time of going to press

OTHER AVAILABLE LANGUAGES (C=cartridge, S=soft)
FORTH £39 (D), £20 (C)

When Commodore announced the arrival of their Vic-20 computer in August 1981, it was considered a very good value for money package, at under £200 it incorporated hi-resolution colour graphics, a full travel keyboard and a sophisticated sound generator. The Basic that it used is the standard Commodore Basic.

At the time its closest rivals were the Tandy Colour Computer and the Atari 400.

For those potential buyers who are comparing the Commodore-64 with the Vic-20, it must be noted that the 64 has not only great potential as a games machine but as a business machine, whereas the Vic-20 is really aimed directly at the home user market.

The Vic initially contains only 3.5k of user RAM! However, an eight or 16k expander cartridge is available.

The Vic-20 is one of the most readily available computers around, being obtainable at most hi-fi and computer shops across the nation. Its closest rival today is the Spectrum which has also been reviewed elsewhere in this supplement. For around £140 or less, today's Vic-20 buyers will get the main console, a cassette deck (previously retailing for around £44), a compilation game cassette and a written introduction to Basic.

BASIC/GRAPHICS/SOUND

The Basic used in the Vic-20 is Commodore's Basic Version 2.0. Unfortunately it is not very fast so it makes it impractical for high speed graphical animation. All of the usual features of Microsoft Basic are present. There is a full set of error messages which are self explanatory, eg "bad subscript error" or "formula too complex error", unlike other machines' coded error messages which require tiresome re-ferencing.

All Basic keywords can be entered in a shortened form. These are mostly two or three characters long. For example the abbreviation for READ is represented by R 'SHIFT' E.

The text character display is disappointingly small, only 22 × 23 characters. On the good side lower and upper case letters are available by touching the Commodore logo key with either business or full graphical symbols.

The Vic was named after its Video Interface Chip which plays an important role within the computer. It is primarily used to handle sound routines, graphics joystick and light-pen control. This can be manipulated by the user to alter its operations to suit the intended application.

Its internal registers control areas like where the location of the screen window occurs, the whereabouts of the character set or where the screen RAM may be found.

There are eight programmable functions, which can easily be programmed to activate anything from a short function to a string of commands accessible at the touch of a key

Compared to the Spectrum the Vic's graphics are feeble giving only 184 × 178 resolution as opposed to the Spectrum's 256 × 192. It is possible though difficult to create user defined graphics on an 8 × 8 block grid, and to alter the character set pointer to point to characters that you have designed, which may then be accessed via the keyboard.

By adding the super expander plug-in cartridge you will have access to fairly powerful graphics features. These include CIRCLE — which gives you the ability to create variable sized circles and PAINT — which allows you to shade in specified areas or shapes.

It must be noted that having said hi-resolution graphics are available, unless you own the super expander cartridge you will find them incredibly difficult to use For example, if you wanted to draw a line between say the points 0,0 to 100,80 you would have to poke each individual location in memory for each point on the screen making it a laborious job to create a simple picture.

Other simple graphical techniques are obtained by using the 64 piece graphics character set, colouring the blocks if necessary This is implemented by poking the 22 × 23 text screen locations with the appropriate graphical character code.

There is a total of 16 colours However, there are limitations. The border can only be one of eight colours, the background may use one of 16 colours and the hi-resolution allows you to use only two colours (foreground and background). If desired, text characters may be individually coloured.

The Vic's sound capabilities are advanced and flexible. It has four channels which include three voices (Alto, Tenor and Soprano) and also a white noise channel. The sound is output through the TV speaker, so the volume may be adjusted on the TV or from the computer's pre-amped 15 volume levels. There are just over three octaves altogether and voices may be synchronised to play simultaneously.

The white noise channel allows you to create almost any type of sound and may be used in conjunction with the other three voices if desired. The manual thoughtfully supplies you with 20 different sound settings that range from a wolf whistle to the rushing sound of ocean waves!

KEYBOARD AND CURSOR CONTROL

The keyboard on the Vic-20 is the same excellent one also found on the CBM-64. It is slightly curved to aid ease of typing. Down the right hand side of the keyboard are the four function keys each with two functions.

The keys are supported by a metal plate which stops the circuit board bending if a key is struck hard. Included are "shift lock" and "run/stop" keys. All graphics symbols and colours are accessible via the keyboard.

Also like the 64, and other Commodore machines, cursor control allows you to "insert" and "delete", move cursor up, down, left or right. One useful feature is that after editing a character or word in a program line, you may press "Return", there is no need to go to the end of the line. You may also move the courser to any character, change it and press Return. This is known as "Full Screen Editing".

PERIPHERALS AVAILABLE

A dedicated cassette recorder is supplied with the computer. It is the standard Commodore version with fixed volume and tone controls for trouble free loading. The cassette is a reliable data transfer source, and will load programs first time!

A disc drive is available from Commodore but few commercial programs have been produced on disc. It will set you back about £225.

The games port is compatible with Atari-type joysticks, and there's plenty of those on the market to choose from!

Other peripheral devices available from Commodore are three types of printer and a colour monitor. Neither Light Pen nor Graphics Tablet seem to have been planned by either Commodore or any electronics independants, and I doubt if any will.

CONCLUSION

This [illegible] ideal [illegible] children or beginners who want to learn the fundamentals of programming. The price has dropped to a very reas[illegible] price — around £99 — with the cassette player and programming [illegible] thrown in [illegible] to [illegible] competition from the Spectrum. You may like to [illegible] expander to your Vic for about £35 — without this it has very little to [illegible] the more [illegible]anced games player/writer. The machine's graphic text and expansion [illegible]itations will [illegible]age the serious games programmer. On [illegible] there [illegible] still a [illegible] of games [illegible] around for the now rather elderly Vic-20.

THE COMMODORE 64

HARDWARE
PROCESSOR BASED 6502
RAM 64 (non expandable)
ROM 20K
POWER SUPPLY. External
R F OUT Phono channel 36
GAME PORTS Two Atari compatible
KEYBOARD· 66 "Qwerty" style, full travel, four double programmable function keys
SOUND OUTPUT. television speaker or hi-fi system
SOFTWARE
TEXT DISPLAY· 40 × 25 characters
HI-RESOLUTION 320 × 200 lines (64000 pixels)
SOUND Three voices, eight octaves, wave shape programmable using envelopes (ADSR)
BASIC· Commodore basic Semo version as VIC-20 and new ROM Pets
USER DEFINED GRAPHICS Up to eight sprites on a 21 by 24 block grid
GRAPHICAL SYMBOLS· 61 (on keyboard)
PRICES AND OTHER OPTIONAL EXTRAS (inc VAT)
COMMODORE 64 £199
DISC DRIVE (5.25") £225
COLOUR MONITOR £230
CASSETTE UNIT £44
DOT MATRIX PRINTER 1525 £230
LIGHT PEN £20
OTHER AVAILABLE LANGUAGES (C=cartridge, s=soft)
FORTH (C). £P.O.A
Z80 CARD CP/M (S). £P.O.A.
PASCAL (C)· £P.O.A.
LOGO (S) £P.O.A.
COMAL (C) £P.O.A
PILOT (S) £P.O.A
*prices correct at time of going to press

For those considering a Commodore Vic-20, it may be worth your while (if you can stretch your budget) to look at the Commodore-64.

The CBM-64 was initially a replacement for the Vic-20. It's far superior with powerful graphics, sound and memory.

The CBM-64 originally retailed at £350 but now, due to competition from Atari, the price has dropped to around £225, although it is possible to find one for below £200.

The machine contains a hefty 64k of RAM leaving about 32k to the user. This should be enough to accommodate the most sophisticated and lengthy of games. The machine has such a large memory as it was primarily built for business purposes but it obviously suits advanced games too! 20k of ROM is also included which is used for the powerful graphics, sound and Basic that the machine uses.

BASIC/GRAPHICS/SOUND

The CBM-64 uses the same Basic as the Vic-20 — and the new ROM Pets — although there are other hardware features which differentiate the two and disqualify compatability. The screen display is 40 characters by 25 (upper or lower case) as opposed to the Vic's 22 × 33 character display. This will cause problems if trying to run a Vic program on the CBM-64, as for example, references to locations in the revised Video Interface Circuit will differ. The hi-resolution graphics offer 320× 200 resolution with a choice of 16 colours for drawing, background, border and coloured text.

One particular graphical feature which is extremely useful is the ability to create and manipulate sprites. This is a feature that any serious games writer will need, whether writing in Basic or Assembly language.

You may draw an object say an alien on a 21 × 24 block grid. Each individual block may be a different colour if necessary. When the object is complete you can store the sprite in memory by a series of poke statements, and recall the sprite to any part of the screen, and move it around if necessary.

Up to eight sprites can be stored at any one time. The Video Interface Circuitry allows sprites to move over each other. One sprite may be given a higher priority so that the others may appear to pass behind it. A sprite collision indicator may be called from the program. This would be necessary in fast action games for missile hit or explosion target for example. Sprites may also be given high or low priority when passing in front of or behind text.

Sixty-one graphical symbols are also available which may be used in the 40 × 25 text character mode.

The CBM-64's sound capabilities are

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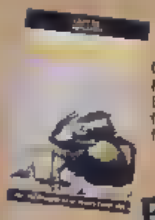

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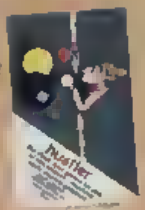

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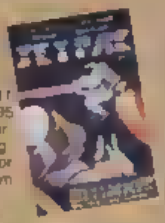

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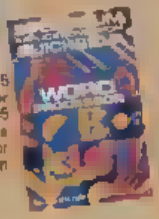

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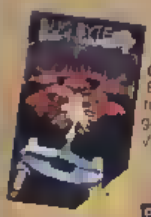

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ZX81
20004 Graphics Pack (Utility) £6 95 (16K)
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BBC B
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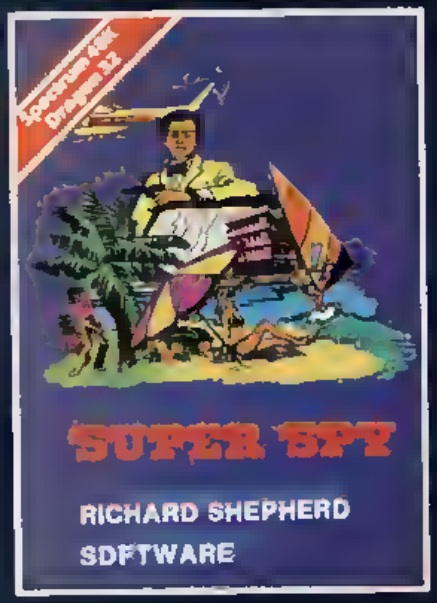

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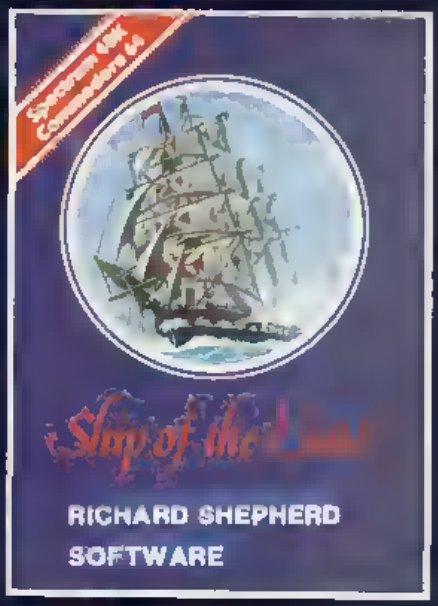

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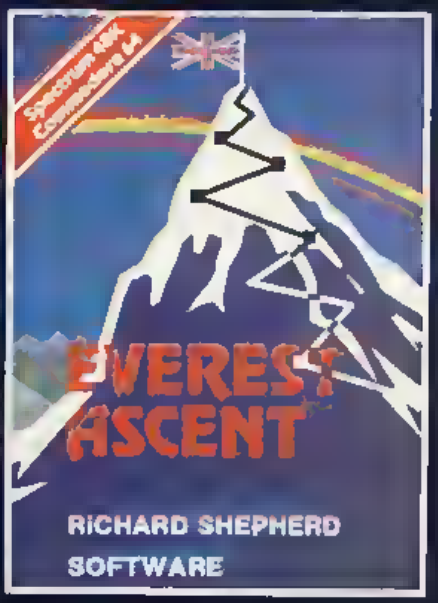

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MORE GOODIES FOR THE BBC MICROCOMPUTER FROM RH ELECTRONICS

The RH lightpen is compact little bigger than a felt-tip It is versatile, with a sophisticated microswitch at its point which responds to the slightest pressure, and an LED lamp at the user's end to indicate data transmission Both microswitch and LED are fully programmable.

The RH lightpen is reliable, with a rugged metal case to provide physical and electronic protection Its sensitivity can be adjusted to the thickness and type of your TV screen, giving the highest levels of accuracy.

With the lightpen connected to your BBC Micro you can draw lines on the screen, or give commands simply by pointing to a menu

Colour-graphic software

This additional software is available so that all the colours of the BBC Micro's palette are available at the tip of your pen Complex graphics can be created in minutes.

Art-fun software

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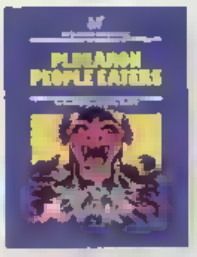

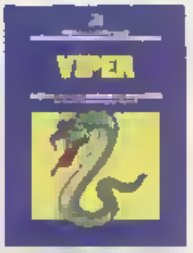

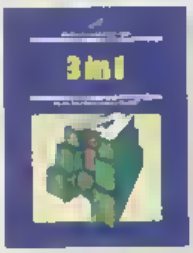

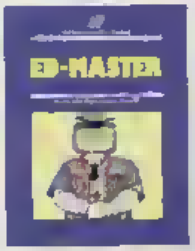

RH Electronics has a whole series of excellent software for the BBC Microcomputer Model B For games business and education they will be highly valued by any BBC Micro owner

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This set of three games for the younger enthusiast includes Task Force a strategic battle of sea and air Demolish blast your way to freedom avoiding radioactive fall out and falling masonry as you go Cosmos - where you have to defend the earth from an invading battle fleet

Ed-master £12 95
This program uses the quiz format combining the element of fun with educational teaching 160 questions may be programmed by the teacher divided into eight subject areas of 20 questions each Questions and answers can be changed as often as you wish The computer will tell the pupil whether he or she has the correct answer or not but cheating is prevented as pupils cannot access the program to find out the correct answers. The scores of up to 40 pupils are stored in the quiz memory and are easily recalled for comparison

Snail Trail £4 95
Help the snail escape from the maze he s fallen into before he starves to death There are two skill levels to this cassette

Database £12 95
A disk for the business or home It enables you to file sort and access a great number of items such as diary entries addresses telephone numbers, accounts or other information

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powerful, offering three voices in eight octaves. Envelopes (ADSR) may be developed allowing one to create the right sound effect for the purpose intended. This method determines the shape of the sound curve. Sound may be outputed through the television speaker or hi-fi system.

KEYBOARD AND CURSOR CONTROL

The "Qwerty" style keyboard is excellent, easy to use and is bounce free. It has 66 keys in all with four programmable keys incorporating eight functions — two per key. Graphics symbols —characters — and colour selection may be made from the keyboard via the control key. One useful feature is the shift lock key. The keyboard is housed in a strong moulded plastic casing.

Cursor control is the same as all other Commodore machines using three keys plus the shift key to allow the user to delete or insert text — which some otherwise good micros lack — move left, right, up or down.

PERIPHERALS AVAILABLE

If cassettes are to be used for data storage purposes, a Commodore cassete player will have to be purchased. This has a unique interface connector and is computer controlled having fixed volume and tone levels.

For the more serious user Commodore 5¼" disc drives are available. These are half the normal height and retail for around £225 which is comparatively cheap.

It is possible to connect the CBM-64 to Pet double drives — 8030 or 8050 — but in this case an IEEE 488 interface and new operating system (DOS) will be necessary. The interface will set you back about £60.

There are plenty of good Atari compatible joysticks available from Commodore and other electronics independents. Joystick prices start at around £10 and go up to about £50 for a really good remote control one! A light pen may be obtained for around £20 and a Commodore printer may be plugged into the serial port socket located at the back.

CONCLUSION

The Commodore 64 will eventually supersede the Vic-20. It offers powerful graphics, sound and that is 64k memory. An increasing amount of software is becoming available for this new micro, and with the pre-Christmas drop in price it is worth considering — if you can stretch your budget to around £285 which will include the Commodore cassette player.

THE SORD M5

HARDWARE
PROCESSOR BASED: Z80A 3.58 MHz
RAM 20K-4K user RAM
ROM 8K expandable to 16K
POWER SUPPLY external
R.F. OUT phono socket
GAME PORTS two × six pin mini din
VIDEO OUT phono socket
SOUND OUT phono socket
SERIAL PORT. built in centronics interface-16 pin
KEYBOARD. 55 key touch sensitive membrain
SOUND OUTPUT television speaker
CASSETTE I/O: eight pin din socket
SOFTWARE
GRAPHICS AND TEXT MODES text, 24 × 40 cherecters GI, 24 × 32 text and keyboard graphics characters multi-colour, "tesselated" 4 × 4 matrix graphics pattens GII, 256 × 192 resolution, up to 16 × 16 size graphical sprites plot, draw, circle, box, bar, paint-BASIC-G
COLOURS transparent, black, green, light green, deep blue, light blue, deep red, cyan, red, light red, deep yellow, light yellow, deep green, purple, grey, white - background, "backlight plane", sprite, character or pixel may be individually coloured colour code from $0 to $f (hex)
SOUND six octavee, 15 volumes, 255 tempos, 8 envelope shapes, three voice harmony, four channele including noise generator
BASIC-I integer
BASIC-G integer advanced graphics
USER DEFINED GRAPHICS up to 224 cherecters
GRAPHICAL SYMBOLS 128 — including Greek italics
SPRITE DEFINITION. max 32 individually controlled, 16 × 16 or 8 × 8 definition; 0 to 31 priority level
PRICE
SORD M5 COMPUTER: £190
OTHER AVAILABLE LANGUAGES
BASIC-G £35-advanced graphics
BASIC-F £35-floating point arithmetic
FAL-C: £35-applications package

What makes a good machine is a combination of quality and value for money. The Sord M5 (by CGL Home Computers) has broken into the sub £200 market retailing for around £190. For that price you get the basic machine, a rather large external power supply, television lead, Basic I cartridge — a very simple and limited integer Basic — and joypads!

There is 20k of RAM. A full 16k is taken up for video RAM, giving superb graphic capabilities. There are three types of Basic available, of which two we shall investigate. The processor used is the Z80A running at 3.58MHz with only 8k of ROM (expandable to 16k with the expansion cartridge).

BASIC/GRAPHICS/SOUND

The Basic-I cartridge is very limited in terms of functions and capabilities. For starters its calculations are integer only with a range of −32767 to 32767. If a decimal is used in a calculation, the result will be "syntax error"! Also, exceeding the integer range limit during the steps of a calculation, i.e. 10 PRINT (100 * 1000/1000) will give you an overflow error, even though the final result of the calculation is in range.

Keywords may be entered by one key press via the function key, although this is, thankfully, optional.

Both upper and lower case characters are available but hold the same values, so LIST and list would be acceptable, also LET A = B would be the same as LET A = b and so on.

Variable names may be up to a maximum of 16 characters long which is quite adequate. LET statements are optional as with the variable reference in NEXT.

When inputing lines, the computer will put a space between the line number and first character but will not separate Keywords. If you do not put a space after a Keyword, it will result in a syntax error. This procedure is extremely annoying and will prove frustrating especially to newcomers in the programming field.

Read and Date statements are also limited. Firstly data containing alphanumerics must be separated by commas and quote marks, ie

DATA "a", "b", "c" etc and you are not allowed to read straight into an array, e.g. . . .

```
10 FOR a = 1 to 10
20 READ s(a)
30 NEXT a
```

Arrays of any size have to be dimensioned. A new command normally found on more expensive machines is HEX$(). This is used to return the hexadecimal value of the string enclosed in the brackets. Error messages is another area which would not be helpful to the newcomer.

Basic-I is not equipped for complex graphics, but can produce simple graphics symbols. These are accessed via FUNCTION together with "3". By simply inserting special control codes in the PRINT statement it is possible to scroll the screen in four directions.

To use the MS to its full, a Basic-G cartridge will have to be purchased. This will turn the MS into a very powerful graphics machine which is ideal for games. It contains all the features mentioned in Basic-I and many more.

Built into the Basic are some impressive interrupt and timing features. For interruption of the keyboard and joystick, ON KEY GOSUB and ON JOY GOSUB are used. Error handling is controlled by ON ERROR GOSUB

There are four screen modes to choose from. These are text mode, which gives a 24 × 40 display — 8 × 6 — character grid; GI, which gives a 24 × 32 text display plus all the graphics symbols; multi-colour mode which can't display text but 'tessellated' graphics patterns, from graphical symbols — 4 × 4 dot matrix size — corresponding to ASCII codes 32 to 255; and finally GII, the hi-resolution mode with full size sprites.

Up to 32 sprites can be displayed and moved individually. You have the option of creating a sprite on a 16 × 16 or eight by eight block grid. Similar to sprites on the Commodore 64, they are each given a priority level — from 0 to 31. The lower the level, the higher the priority, so a sprite of level five will 'eclipse' a sprite of level six and so on.

The statments used to manipulate the sprites are: LOC, location of the sprite on the screen; SCOD, to assign the sprite code; SCOL, to colour the sprite and ERASE, followed by the sprite code to erase it. DISC and DRCT are used to calculate the distance between sprites.

As well as sprite creation, there is a potential of 224 user definable characters. The high-resolution graphics give a 256 by 192 display. There are some other powerful statements too. PLOT is used to plot a single point; GMOVE to position the graphics cursor; DRAW to draw a line from graphics cursor to the given co-ordinates; BOX, used to draw a square or rectangle and BAR, the same as BOX but solid.

Two even more powerful statements are CIRCLE and PAINT, used to shade an enclosed area.

Initially there are two alternate screens — screen 0 and screen 1. It is possible to enter text into one while the other is being displayed, transfer text in one screen to the other — or vice versa — or rapidly switch between the two. View windows may also be set up. These are formatted VIEW X0,Y0,X1,Y1, where X0, Y0 are the upper left corner, and X1,Y1 are the lower right corner.

Sound generator techniques are also very sophisticated. There are six octaves with 15 variable volume settings, 255 variable tempos, four channels and eight preset envelope shapes!

KEYBOARD AND CURSOR CONTROL

The keyboard is the 'touch sensitive' type — similar to the Spectrum. It has a much more solid feel than the Spectrum, needing the minumum amount of pressure to activate a key. The keys are an odd shape, some square and some rectangular, with the bottom right hand corner chopped off! Most keys have three functions though others have an extra control function, e.g mode GII.

The letters A to Z have FUNCTION accessible keywords. Each Key produces a click through the TV when pressed. This may be turned off if desired.

Editing is simple. There are four keys which when used in conjunction with the control key move the cursor up, down, left and right. Operating SHIFT + DEL will delete a character, and CONTROL + "P" is used for inserting text. Once an insertion or deletion has been performed, you may press RETURN, as the computer will input everything before and after the cursor on that line number.

PERIPHERALS AVAILABLE

You may use any cassette recorder of your choice. The cassette input is an eight pin din socket which supports a remote facility.

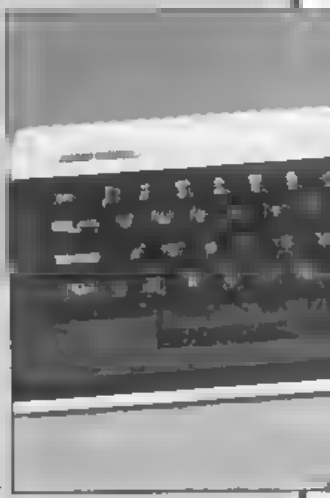
Apart from Basic-I and Basic-G, there are two other ROM cartridges. These are Basic-F — designed for floating point arithmetic — and FALC-applicanons package. No information or other languages like Pascal or Forth has been released yet, but there are plans for a 32k memory upgrade.

CONCLUSION

The Sord M5 is a quality machine with some powerful features. But without the Basic-G cartridge it is nothing special. The cartridge will set you back about £35 — upping the price of the machine to £225. The vast amount of memory taken up for graphics means that most of the graphical implementation is already set up for you, and this makes the 4k user RAM look not so bad.

ATAR

HARDWARE
PROCESSOR BASED 6502
RAM ATARI 600XL 16K standard
RAM ATARI 800XL 16K expandable
ROM 10K
POWER SUPPLY external
R F OUT phono
GAME PORTS 2
VIDEO OUT 5 pin din
SERIALPORT 13 pin
KEYBOARD 55 'Qwerty style full travel
SOUNDOUTPUT television speaker
NEWCASSETTE 1010 600bps, 100K bytes, 4 track, 2 channel, auto playback, volume, 3 digit tape counter, digital/audio
NEWDISCDRIVE 1050 built-in 6507 microprocessor, on board ROM auto standby, capacity, dual density, single sided
SOFTWARE
GRAPHICS AND TEXT MODES
MODE 0. 40 × 24 text, MODE 1 20 × 24 text; MODE 2 20 × 12 text, five colours, MODE 3. 40 × 24 graphics 4 colours, MODE 4 80 × 48 graphics, 2 colours, MODE 5 80 × 48 graphics, 4 colours, MODE 6 160 × 96 graphics, 2 colours, MODE 7 160 × 96 graphics, 4 colours, MODE 8 320 × 192 graphics, 2 colours; MODE 9 80 × 192 graphics, 1 colour, MODE 10 80 × 192 graphics, 9 colours, MODE 11 80 × 192 graphics, 16 colours, MODE 12 40 × 24 graphics, 5 colours, MODE 13: 40 × 12 graphics, 5 colours, MODE 14 160 × 192



600 XL

graphics, 2 colours, MODE 15, 160 × 192 graphics, 4 colours
COLOURS· grey, gold, orange, red-orange, pink, pink-purple, purple-blue blue 1, blue 2, light blue, terquoise, green-blue-green, yellow-green, orange-green, light orange · luminosity level between 0 to 15
SOUND four voices, 15 sound variations-distortion ,255 pitch variations and 16 sound levels
BASIC Atari extended Microsoft Basic
USER DEFINED GRAPHICS yes 8 × 8 block grid
GRAPHICAL SYMBOLS, 26
PRICES AND OTHER OPTIONAL EXTRAS
ATARI 600 XL £160
ATARI 800XL- £249
CASSETTE UNIT, £45
CASSETTE 1010· £49
COLOURPRINTER
LETTER £199
LETTERQUALITY
PRINTER 1027 £299
DISC DRIVE 810 £269
DISCDRIVE 1050, £299
CP/M £P O.A.
TOUCH TABLET £70
TRACK BALL £40
LIGHT PEN £P O.A
OTHER AVAILABLE LANGUAGES (C=cartridge, S=software)
MICROSOFT (D) £60 (inc. VAT)
PILOT (consumer)· £60 (inc. VAT)
PILOT (educater)· £90 (inc. VAT)
ATARI LOGO £60 (inc. VAT)
MACRO ASSEMBLER £60 (inc VAT)
ASSEMBLER EDITOR· £40 (inc. VAT)

It's not often that a new computer system is heavily backed up by software, experience. The Atari 800 XL is one such computer. It's a modernised and extended version of the now famous Atari 400 and 800.

The 600 XL will retail for around £160 and the 800 XL for around £250. There are some major aspects which differentiate the 600XL and the previous Atari 400/800 models.

BASIC/GRAPHICS/SOUND

The Basic used is standard Atari Basic with a few additions to the graphics. Unlike the 400/800 the Basic is already built into the machine and is operative the moment you switch on.

One interesting new feature is the SELF TEST mode. This is accessed by either holding down SELECT before and after the computer is turned on, or inputing the command "BYE". You have then a four option menu. The first is "MEMORY" which tests all ROM/RAM and reports if any are malfunctioning.

The second is AUDIO/VISUAL which checks the graphics and musical channels. The third checks the keyboard, while "ALL TESTS" runs through everything.

There are 15 modes altogether as opposed to the 12 on the 400/800 models, with a maximum resolution of 320 — 192. Three modes are provided for text and graphical characters, while the other nine are used for full screen graphics or mixed graphics and text.

PLOT will plot a single point, and DRAW will drew a line to a specified position from the last coordinate used.

A potential 256 colours can be created by varying the luminosity from 1 to 16 in conjunction with the 16 available shades. SETCOLOUR is used to set the shade and luminance of the chosen colour. These will include background, border or drawing colour. Alternatively, COLOR is used in modes three to eleven for the PLOT statement. Atari still provide no conceivable way of turning off the "auto colour variation" which operates after a specified time if no key has been pressed.

Sound is produced using SOUND C,F,D,V, where C is the channel number — zero to three, F is the frequency, D is the distortion-pure tones and sound effects, and V is the volume setting from zero to 16. These channels may be synchronised to perform simultaneously.

KEYBOARD AND CURSOR CONTROL

The "Qwerty" style keyboard is very reminiscent of the Atari 800 model. There are 56 full travel keys altogether with either upper or lower case lettering. Most of the keys have auto repeat facility.

The 800's rather large reset, option, select and start have been replaced on the 800 by small flush metal buttons, which contribute to the 600's rather neat design. One new addition is the "help" key.

There are seven editing keys for cursor manipulation. When used in conjunction with CONTROL, four keys are used to move the cursor up, down, left or right. CONTROL DELETE BACKSPACE will move character to the right of the cursor, deleting each character in turn, DELETE BACK SPACE will move the cursor left, deleting charactere; CONTROL INSERT is used for inserting text; SHIFT INSERT will insert a line space; SHIFT DELETE BACKSPACE will delete a line and SHIFT CLEAR will clear the screen and home the cursor.

CONTROL A to Z accesses the 26 graphical characters — another set of inverse duplicate characters are available through PRINT CHR$(128-154).

PERIPHERALS AVAILABLE

The Atari 600 XL uses a dedicated cassette — the same as the 400/800, which has twin channels, one for data and the other for music or voice. It is capable of storing 100k on a 60 minute tape and transfers data at 600 baud.

Into the same peripheral socket can be connected the new 1050 controlled logic disc drive. Colour, dot matrix and letter quality printers are also available.

Only two joystick ports exist as opposed to four on the Atari 800. As mentioned, the program-or ROM socket is compatible with all previous Atari 400/800 cartridges.

At the back of the machine is a parallel bus. This will be used to take the 48k memory expansion. In addition, a general expansion box with several slots will be available in April '84.

Into this could be plugged a whole host of goodies like voice synthesis or perhaps dual processor — let your imagination wander! I'm not sure what the power supply will look like as mine was a rather oversized prototype, but it connects with a seven pin din socket — not compatible with previous Atari power supplies. Finally there's a five pin din socket for connection to a colour monitor though Atari don't make their own!

All of this makes it a worthy son of the Atari 400/800 range — and an ideal games machine.

CONCLUSION

The Atari 600/800XL range is more flexible and adaptable than its predecessors. The 600XL is a beautifully designed machine, and like all Atari's, is a great micro for games players. However the £160 machine, priced at around £160 will meet strong opposition in the shape of the more powerful Acorn Electron. Most you, Acorn don't have over 1,000 readily available software titles!

ATARI 400/800

HARDWARE
PROCESSOR BASED 6502
RAM ATARI 800. 48K standard
RAM ATARI 400 16K
ROM. 10K
POWER SUPPLY external
R F OUT built in wira
GAME PORTS 4
VIDEO OUT 5 pin din
SERIALPORT 13 pin
KEYBOARD -800 61 'Askey styla full travel
KEYBOARD -400 61 'Askey styla tanch sensitive
NEWCASSETTE 1010. 600bps, 100K bytes, 4 track, 2 channel.
NEWDISCDRIVE 1050· BUILT/IN 6507 microprocessor, on boatd ROM,
TEXT DISPLAY 40 × 25 characters

HI-Res	LUMIN	COL	MEM
40 × 24	4	4	25K
80 × 48	2	2	5K
80 × 48	4	4	1K
t60 × 96	2	2	2K
t60 × 96	4	4	4K
320 × 192	2	1	8K
80 × 192	16	1	8K
80 × 192	9	9	8K
80 × 192	1	16	8K

SOUND four voicas, 15 sonnd vatiations-distortion-, 255 pitch variations and 16 sonnd levels
BASIC. Atan extended Microsoft
USER DEFINED GRAPHICS yes
GRAPHICAL SYMBOLS. yes
PRICES AND OTHER OPTIONAL EXTRAS
ATARI 800. £269
ATARI 400-t6K- £135
CASSETTE UNIT £45
CASSETTE 1010. £49
COLOUR MONITOR: £P O.A.
COLOURPRINTER LETTER £199
LETTERQUALITY PRINTER 1027. £299
DISC DRIVE 810 £269
DISC DRIVE 1050, £299
CP/M. £P O A
GRAPHICS TABLET. £P O.A.
TRACK BALL £P O.A
LIGHT PEN £P.O A.
OTHER AVAILABLE LANGUAGES (C=cartndge, S=software)
MICROSOFT (D) £60 (inc VAT)
PILOT(consumer). £60 (inc VAT)
PILOT (adncational) £90 (inc VAT)
ATARI LOGO. £60 (inc VAT)
MACRO ASSEMBLER· £60 (inc VAT)
ASSEMBLER EDITOR £40 (inc. VAT)

Due to massive price decreases Atari computers are becoming more affordable to a wider range of micro users When the Atari 400/800 was launched, the 800 retailed at around £600 and the 400 for around £400. The only main differences were the keyboards and the amount ol memory supplied ff the 400 is brought up to 800 memory specifications it will be fully compatible Many dealers selling the machines will add the extra memory to the 400 and sell it as a fully expanded machine, although Atan do not officially recommend it.

Although Atan describes both machines as all purpose micros they are built in many aspects as games machines and little business or scientific applicanon programs exist Also it is worth noting that on buying an Atan for programming purposes neither machine comes with Basic, this can be purchased for around £40 as a plug in cartndge.

Atari say that they expect to include the Basic cartridge plus a couple of manuals in with the price this Christmas.

BASIC/GRAPHICS/SOUND

Atan Basic is fairly standard Microsoft but unfortunately rather slow. It uses the 6502 microprocessor String variables of up to 100 characters are allowed with a maximum of 128 variable names. The 800 comes with 48k of RAM and 10k of ROM. The memory is divided up into blocks of 16k-plug in cartridges. The 400 may also be expanded from the originally specified 16k to 48k and 10k of ROM.

Now we come to the bit you've all been waiting for — graphics! Atari graphics are excellent, giving the games programmer great potential lor fast, colourful achon games (providing they are in machine code!)

Inside the Atari the graphics chips have 12 different modes altogether — but the manual does not explain this fully. These modes vary in resolution together with the number of colours available.

The maximum resolution is a 320 × 192 line display although using only one colour. To get the full use of 16 colours one must use the 80 × 192 resolution. Other combinations of colours and resolution can be found in the rest of the modes.

Graphics functions are fairly powerful too. To draw a line first you must specify the starting position — ie PLOT x, y — then you may draw to another point on the screen — ie DRAWTO x2, y2. From there on you can continue to use the draw statement to draw to following coordinates.

One powerful feature is the ability to shade specified areas on the screen which saves a lot of tiresome calculation.

You have the option of using full screen of mixed graphics and text. A full set of graphics characters are available as well as the ability to create user defined graphics.

Colour is one area where the Atari excels. There are 16 colours altogether each with a luminosity of 1 to 16 giving a potential of 256 colours in total. Some amazing graphics have been created using this technique and the result is almost a life-like graphical representation.

The SETCOLOR statement is useful though takes time to get used to, as there is a separate COLOR command as well, ie COLOR 1. SET COLOR uses three parameters — background colour, border and drawing colour — SETCOLOUR BA, BO, D.

It is also possible (by one command) to change all pixels on the screen of one particular colour to a different colour.

Atari sound will be familiar if you've ever walked into an arcade! Four voices, 15 sound variations, 255 pitch variations and 16 sound levels are used. It is possible to create almost any type of sound varying from the mellow harmonies of Chopin to the rocket blast whirl of an extra-terrestrial space ship on the rampage! Sound is output through the television speaker.

It is hard to criticise Atari sound but it lacks a duration parameter This is resolved by the laborious use ol nested loops.

KEYBOARD AND CURSOR CONTROL

The Atan 800 full travel keyboard has a nice feel though it is not perfect. I found the blip-noise — as a key is touched — irritating to the point of distraction. There are 61 keys in all including option, start and select keys. Four keys are used to move the cursor up, down, left and right and these are used inconjunction with the control key

Delete/backspace is on one key while insert is separate. Either upper or lower case characters are available As well as graphics characters which are accessible via the control or escape keys.

The Atari 400 keyboard incorporates all the keys on the 800 model but instead is only touch sensitive similar to that of the ZX81. I found that I had to press quite hard to get a contact. There is however a shallow rim around each key to help your finger select it!

If your price bracket falls inline with the 400

but you dislike the keyboard, you will be pleased to know you can replace it with a full travel one, for about £30

PERIPHERALS AVAILABLE

Both cassette and disc drive are available for both micros. The cassette has a special interface, similar to that of the Commodore — so whether you already own a cassette or not you will have to fork out an extra £45 for an official one!

Actually the Atari's cassette is quite special. It has a stereo head for twin channel output. One channel is used for the data and the other for the voice or music.

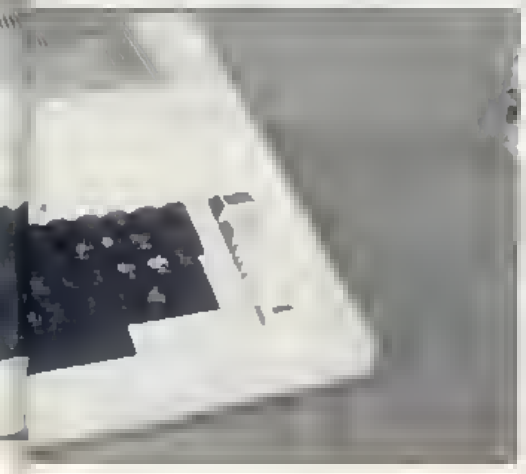
Atari says that a new cassette will be available in the near future for around £60. It incorporates four tracks, two channels, auto playback facility and digital/audio signal.

Atari make a 5¼ inch disc drive which retails for around £269. This plugs into the side of the computer and the cassette may then be pluged into the disc drive!

Among the other products planned for the near future are a graphics tablet, C/PM, track ball, light pen colour and letter quality printers

CONCLUSION

Now that the price of both the 400/800 have dropped they are both well worth considering. The 400 will perform just as well as an 800 when fully expanded. The machines are heavily backed by a range of high quality games software — although this is rather pricey compared to other machines. At around £269 for the 800 and £135 for the 400 we reckon these machines are worth taking a look at.



THE ORIC-1

HARDWARE
PROCESSOR. 6502
RAM 16k or 48k
ROM 16k-operating system and Basic interpreter
GAMES PORTS none
PARALLEL PRINTER PORT 20 pin "Centronics type" connector
KEYBOARD 57 key, membrane type-auto repeat
SOUND OUTPUT on board speaker
SOFTWARE
TEXT DISPLAY. 29 × 27
HI-RESOLUTION. 240 × 200
SOUND. six octaves, 16 volume levels, noise and pure tone channels, six preset envelope shapes, four preset sounds — SHOOT, EXPLODE, PING and ZAP
BASIC: Oric "Microsoft type"
USER DEFINED GRAPHICS 8 × 8 block grid
COLOURS black, red, green, yellow, blue, magenta, cyan, white
GRAPHICAL SYMBOLS Oric block graphics + italic greek characters
PRICES AND OTHER OPTIONAL EXTRAS
ORIC-1 16k· £99.95
ORIC-1 48k £139.95
MICRO DISC DRIVE 3"· £200
COLOUR PRINTER/PLOTTER MCP-40 £170

Despite a circulation of around 30,000 machines in France, the Oric-1 has never really taken off in Britain.

A small computer with a Spectrum-style keyboard, limited graphics and a price under £100, is bound to be compared with the popular Sinclair computer. Unfortunately the Oric-1 falls far short of the Spectrum.

The Oric-1 was introduced as the first computer under £100 with hi-resolution graphics, colour and sound. Although this may sound attractive, the main problem was that the Oric's potentially good features were badly implemented. The manual is badly documented and the ROM is full of bugs!

However we have secret plans of a new ROM which will hopefully iron out all the defects — but as yet there is no date for release.

The Oric with 16k retails for around £100, and the 48k version for around £140-more expensive than the Spectrum.

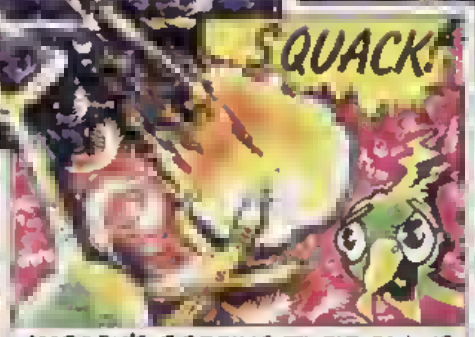
BASIC/GRAPHICS/SOUND

For the most part, the 6502 processor based machine uses what seems to be fairly standard Microsoft Basic. There are only a few extensions. IF THEN ELSE is included, REPEAT UNTIL and DEF FN may be used for numerical defined functions.

Two additional memory manipulation procedures — also found on the Nascom II — are DEEK and DOKE. DEEK and DOKE are double byte versions of PEEK and POKE which are also available.

BEYOND

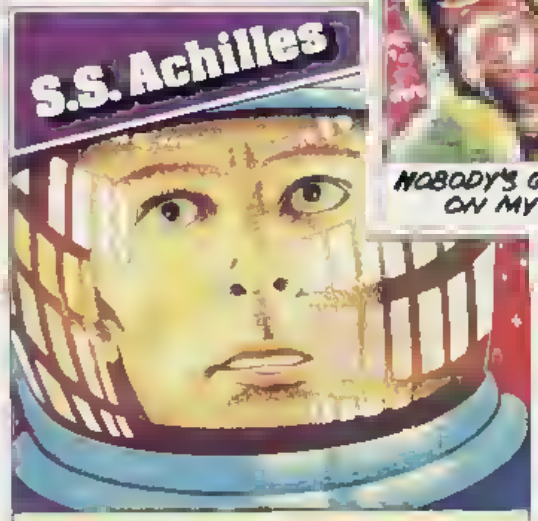
CHALLENGING SOFTWARE



NOBODY'S GETTING THEIR CLAWS ON MY JEWEL!

SONAR contact and the depth charges tumble

Death lurked under every wave



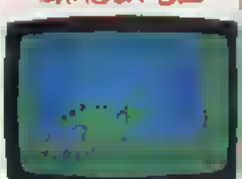
Red Alert Alien Intruder!

RUNS ON COMMODORE 64

...I must keep it out of the main corridors

ATARI 400/800 WITH 48K

RUNS ON DRAGON 32



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The text display is 39 × 27 characters with either lower or upper case characters. In TEXT mode it is possible to extend the user RAM by about 7k.

I found it impossible to get an adequate screen display, despite trying two televisions. There is an R.G.B. socket at the back to supply a colour monitor, but that means spending at least another £200! Apparently, later production models had improved R.F. output modulators.

The graphics are fairly fast though are difficult to use. Three modes are provided; LORES 0, LORES 1 and HIRES. In the LORES modes, text, graphics characters and blocks can be PLOTed on the 39 × 27 grid. SCRN (X,Y) returns the ASCII value at position X,Y. In HIRES mode you may draw lines from previous plotted points, draw circles, change the way lines are drawn with the PATTERN command or fill in an area of specified number of rows. The hi-resolution is a 240 across by 200 points down with four lines of text at the bottom.

For some reason graphical modes improved the reception. In addition user definable graphics are available.

There is a maximum of eight colours. PAPER is used to set the background colour and INK will set the foreground colour. INK and PAPER may also be used in TEXT mode for coloured characters and background.

Sound is about the only area on the Oric that is good, well not fantastic! There are 6 octaves, 15 volumes, noise and pure tone channels, frequency and six preset envelope shapes. There are 4 preset sound effects which are executed by one word each. These are SHOOT, EXPLODE, PING and ZAP! That should be enough to keep anyone occupied!

KEYBOARD/CURSOR CONTROL/EDITING

There are 57 keys — most with auto repeat — planted on a Spectrum-style keyboard. The keys need a fair bit of pressure to activate them compared to the rather frictionless feel on the Spectrum. Each key produces a click when depressed, which may be turned on or off by CONTROL "F". The keys are a very narrow shape which frequently causes you to miss them. Fast typing is totally out of the question!

The space bar is sensibly placed in the normal position. The keyboard is mounted in an ugly case, though it is robust and sturdy.

Oric's cursor control is so bad it shouldn't be allowed! The procedure is to move the cursor up to the space before the beginning of the line, then press CONTROL "A" to enter the desired part of the line, changing text as necessary or deleting text with the DEL key. There is no facility to insert text or scroll part of the line to close a gap. On the good side TRON and TROFF are used to activate trace on or off.

PERIPHERALS AVAILABLE

When I tried loading and saving programs on our recorder, frequent errors arose. It was very difficult to adjust level settings although some commercially produced programs were a little easier to load.

The loading and saving procedures are CLOAD "filename" and Csave "filename", respectively, where the filename may be up to 17 characters in length. The loading and searching messages are printed at the top of the screen above the text window.

Micro disc drives are expected sometime early next year, and these will be Hitachi 3" size. The expected price is around £200.

Already available is a four colour printer/plotter. It prints either 40 or 80 columns a line at a speed of 12 CPS. It has its own power supply and plugs straight into the Oric. It retails for around £170.

FORTH is available in cassette form which will cost you around £18. Extended Basic and Pascal are being planned.

At the back of the machine is a 20 pin printer connector and a 34 pin bus expander, which will probably connect to the microdrives — when they come!

CONCLUSION

The Oric is [illegible] and sound computer around, and as a games machine it offers reasonable facilities. But there is a limited amount of software backing it up — so far. The machine is aimed at beginners — but the manual is badly written, superficial in details and badly in need of an immediate revamp. The [illegible] is suitable only for one finger typists. It will be interesting to see what the new extended [illegible] is like in terms of improving the Oric's capabilities. As mentioned Oric have produced a new ROM which they say cleared up most of the machine's irritating features. There is growing speculation that the Oric with this new ROM will be produced in a new case — and a completely new name! Oric have not said if the ROM will be sold separately to allow existing owners to update their machines.

TEXAS

RAM 16K (expandable to 48K)
ROM, 26K (expandable to 62K)
GAME PORTS, 2
KEYBOARD 48 key (auto repeat), full travel, "Qwerty" layout
SOUND OUTPUT T.V. speaker
TEXT DISPLAY: 29 × 24
HI-RESOLUTION 256 × 192
SOUND: four channels
BASIC Texas Basic (TI-extended Basic is optional)
USER DEFINED GRAPHICS: yes (8 × 8 block grid)
COLOURS 16, transparent, black, medium green, light green, dark blue, light blue, dark red, cyan, medium red, light red, dark yellow, light yellow, dark green, magenta, grey. any one of 16 colours may be used for background or foreground. All may be on the screen at once if necessary.
PRICES AND OPTIONAL EXTRAS
TEXAS TI-99/4A £100
PERIPHERAL EXPANSION SYSTEM £90
DISC DRIVE £170
DISC DRIVE CONTROLLER CARD: £120
80 COLUMN PRINTER: £570
SPEECH SYNTHESISER £50
RS-232 CARD £90
32K EXPANSION £90
JOYSTICK £25
CASSETTE £45
CASSETTE CABLE 10
OTHER AVAILABLE LANGUAGES (cartridge)
TI EXTENDED BASIC £70
TI LOGO II £70

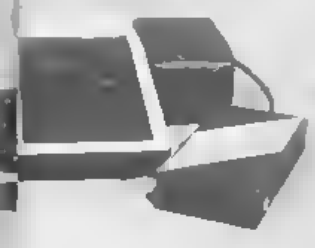
99/4a

RESERVED WORDS TI BASIC

abs, append, asc, atn, base, break, bye, call, chr$, close con, continue, cos, data, def, delete, dim, display, edit, eend, else, eol, exp, fixed, for, go, gosub, goto, if, inpnt mt internal, len, let, list, log, new, next, num, number, old, on, open, option, output, permanent, pos, print, randomize, read, rec, relative, rem, res, resequence, restore, return, rnd, run, save, seg$, sequential, sgn, sin, sqr, step stop, str$, sub, tab, tan, then, to, trace, unbreak, untrace, update, val, varrable,

TI EXTENDED BASIC

abs, accept, all, and, append, asc, at, atn, base, beep, break, bye, call, chr$, close, con, continue, cos, data, del, delete, digit, dim, display, else, end, eof, erase, error, exp fixed for, go, gosnb, goto, if, image, inpnt, int, internal, len, let, linput, list, log, max, merge, mrn, new, next, not, num, nnmber, numeric, old, on, open, option, or, outpnt, permanent, pi, pos, print, randomize, read, rec, relative, rem, res, resequence, restore, return, rnd, rpt$, run, save, seg$ sequentral, sgn, sin size, sqr, step, stop, str$, sub, snbend, subexit, tab, tan, then, te, trace, ualpha, unbreak, untrace, update, using, val, validate, varieble, warning, xor



THE TI-99/4a falls into the same price range as the Onc-1, Spectrum and Vrc-20, retailing at around £100.

BASIC/GRAPHICS/SOUND

There are two Basics available These are the built-in standard TI Basrc, and TI Extended Basic

Both Basics are extremaly slow. The Basic is not structured at all, being similar to Microsoft Basic. One very bad feature is the inabulty to have multiple statement program lines.

Two useful routines built in to the system are auto line number and line renumber procedures.

Although these are easy to use, again they take time to execute. This alone will restrict games programming quite considerably in terms of speed, as graphics animation requires detailed arithmetic calculatrons

Even though the hi-resolution rs 256 by 192 pixels, it's a pain to use! For a start there are no commands for drawing or plotting The procedure is to define a character as a line segment in the intended direction, then repeat the character for the necessary length to make up the desired line

User defined graphics are created on an eight by eight block grid using the CALL CHAR command, which determines which pixels should be set (on) or reset (off). The standard set of characters (ASCII codes 32 to 127) may be redefined, or another 31 characters from ASCII codes 128 to 159 are definable for extra characters.

Single pixels are plotted by defining a character with only one block turned "on", and then printing it in the desired screen location. With the extended Basic module in place, graphrcs are greatly expanded. The most important addition is the programmrng of sprites — like the Commodore-64 Sprites can be moved smoothly around the screen as necessary. They also may be magnified, have set speeds and vector directions. COINC is used to detect sprite collision which would be essential for use when your games character has been hit by the opponent!

Sprites are also given a priority factor. A higher priority sprite will eclipse any lower prrority sprite, without erasing rt. Sprite creation and manipulatron are about the only really good graphical points on the Texas.

There are 16 colours available Two colours may be included in one defined character although all sixteen may be on the screen at any one time.

Each of the sixteen colours are drfferent, not eight flashing like the BBC. The "subprogram" COLOR is used to set a character's background and foreground colour.

Sound is another good area! There are four individual channels which can be set to run separately or synchuonised together.

The best part is that program execution may continue while sound is being played. This could be put to good use as a background tune while a game is being played. In addition there are four preset values for "white noise" and four for "periodic noise".

KEYBOARD/CURSOR CONTROL/EDITING

The "qwerty" style keyboard consists ol 48 full travel keys, most with auto repeat Quite a few features — like quotation marks — are accessible via the function key, and other combinations of CTRL and SHIFT. The general leel of the keyboard is spongy, frequently causing the wrong keys to be hit This, of course, limits fast and accurate typing. Also the Return key is irritatingly small.

Four cursor direction keys are accessed through the FCTN key.

Although the keyboard is not of good quality, it is very strong, and is mounted in a beautifully designed metallic style case

PERIPHERALS AVAILABLE

Cassette input is via an Atari joystick type socket, located at the rear. The lead does not come with the machine and costs an extra £10. Texas do make their own cassette recorder which is quite an expensive investment at £45, which comes complete with lead. I used a standard cheap model which loaded and saved each time without any trouble

A whole feast of peripherals can be linked together. Unfortunately, most of these require their own power supplies

A superb speech synthesiser may be directly plugged into the side on the machine. The realistic voice patterns that it usea are reminiscent of the Texas *Speak* and *Spell*.

Other peripherals like the disc drives and printer require the "peripheral expansion system", which alone costs £90! The expensive joysticks are of poor quality and retail for around £25.

All additional language modules are also very expensive. These include TI Logo-II and extended Basic which will set you back another £70 each. The power supply and PAL modulator are both external, also rather large and cumbersome.

CONCLUSION

The Texas TI 99/4a was originally very expensive [illegible] — as with most micros these days — the price has dropped to around £100 [illegible] to the extreme competition. However, even though the machine is cheap the majority of peripherals are expensive. The Basic is extremely slow, the graphics limited and without the Basic module very little in the way of games graphics can be achieved. Software is often [illegible] to come by and is expensive too.

SINCLAIR SPECTRUM

HARDWARE
PROCESSOR BASED. Z80A (3.5MHz)
RAM 16K or 48K
ROM 16K
POWER SUPPLY external
R F OUT phono socket (channel 36)
GAME PORTS no
VIDEO OUT no
EXPANSION PORT. edge connector
KEYBOARD: 40 (auto repeat) keys, limited travel, membrane
SOUND OUTPUT on board speaker/cassette output
CASSETTE I/O: two 3.5 jack sockets
SOFTWARE
TEXT DISPLAY 24 lines by 32 characters (eight by eight pixels), upper/lower case.
HI-RESOLUTION 256 by 192 pixels
SOUND over ten octaves; pitch and duration may be specified
BASIC Sinclair Basic
USER DEFINED GRAPHICS maximum of 21
COLOURS. background, border, foreground may be set from one of eight colours, normal, flash, inverse or bright settings; colours available — black, blue, red magenta, green, cyan, yellow and white
GRAPHICAL SYMBOLS: 16 preset
PRICES AND OTHER OPTIONAL EXTRAS
SINCLAIR ZX-SPECTRUM (16K). £99 (inc VAT)
SINCLAIR ZX-SPECTRUM (48K). £129 (inc. VAT)
ZX-MICRODRIVE (100K) £50 (inc VAT)
ZX PRINTER (50 CPS) £50 (inc. VAT)
INTERFACE I: £29.95 (when bought with Microdrive)
INTERFACE II £19.95
MICRONET 800 ADAPTOR £99.95
Further information from
Sinclair Research Ltd
Stanhope Road,
Camberley,
Surrey
Tel. 0276 685311

There's no doubt that the Sinclair Spectrum is a winner. Sinclair's basic aims have always been to provide comprehensive and powerful systems at a fraction of the price of their competitors. One other breakthrough that the Spectrum — and its predecessors — has achieved is highly integrated circuitry, which drastically reduces the number of chips needed without sacrificing computer power. And it's the top games playing machine of the moment.

BASIC/GRAPHICS/SOUND

Sinclair Basic is powerful, extremely easy to learn — but very slow.

The Spectrum will space out program lines very neatly, an important factor for those users who read a clear and concise listing.

Variable names can't contain characters "*" and "—", although quotation marks can be included with the format A$ = "Hello " "Uncle" " Sinclair"! MID$,LEFT$ and RIGHT$ are not used. Instead a general string slicing procedure is applied with the expression A$ (f to l), where f and l represent the first and last character numbers of the slice

Error detection is immediate on attempting to input a line, resulting in an error cursor showing the appropriate position. This should be especially helpful to the novice programmer as it will cut down error correction on program execution.

A comprehensive set of functions exists, including the usual comparisons and mathematical operations which are all easy to use.

The text display holds only 32 characters by 24 lines making the potential for word processing extremely limited.

However, software is available to give 64 characters per line.

If desired, text may be inverted to produce a white on black effect, as well as being individually coloured. On the good side, the reception on the whole is clear and distortion-free

LOAD"filename" and SAVE"filename" are for loading or saving a Basic program. Arrays may be loaded or saved with LOAD-"filename",DATA () and SAVE"filename",DATA (). SAVE(or LOAD) followed by "filename" SCREEN$ will save or load the screen memory

This is useful if you have created a detailed picture, which takes a matter of seconds to load as opposed to the long winded procedure of redrawing it from within the program.

MERGE is used to merge a file from tape with the existing program in memory, overwriting line numbers and variables that already exist in the old program. However MERGE cannot be used with arrays, or specified "byte" files.

The graphics are a pleasure to use! The resolution is quite adequate for the power and cost of the machine, giving a 176 × 256 pixel display. PLOT x,y will plot a single pixel, and POINT will report if a particular pixel is set or not.

The DRAW statement may have up to three parameters and a, where x,y are the finishing coordinates and "a" determines the positive or negative drift of the line.

Before DRAW is executive, PLOT must specify the starting co-ordinate, otherwise it will be assumed as 0,0 For example, if you want to draw an arc, say a quarter of a circle starting at position 100,100, the procedure would be PLOT x1,y1: DRAW x2,62, PI*0.5, where x1,y1 and x2,y2 are the starting and finishing co-ordinates, respectively x2,y2 also determines the size of the arc (PI$0.8 is taken as 0.5$π radians).

DRAW x,y, where no third argument is implied with draw a straight line.

CIRCLE inevitably draws circles! Its syntax is CIRCLE x,6,r, where x,y represent the centre's location, and r is the radius

User defined graphics are easily created using the BIN statement, and are designed on

print the words "on blue" on a blue background, but will leave the PAPER variable unchanged for text outside the PRINT statement.

OVER can also be used to "overprint" (merge with) existing characters. This could be put to good use for adding accents over letters and so on.

There is, unfortunately, no FILL command

The colour grid is divided up into 32 columns by 24 rows (like the text screen). The snag is that each colour block contains the normal eight by eight pixel formation, and can an eight by eight block grid, with a maximum of 21 user definitions.

Each BIN statement takes care of one line on the grid, so eight consecutive statements are required. It is then simply a matter of poking the character into the memory.

The Spectrum has eight different colours altogether. PAPER is used to colour the background, INK (logical names, aren't they?) is used to colour foreground and BORDER to colour the screen border. All of these may use one of eight available colours.

IF FLASH is set, characters will flash between their respective and inverse colours.

Characters may also be set to normal or BRIGHT levels. It is also possible to interact these commands with PRINT statements e.g PRINT PAPER 6; "on blue", which will only

All notes above middle "c" are positive, and notes below are negative. Incrementing or decrementing the pitch will result in a semitone raise or drop, respectively. There is no facility to create envelope shapes unless contain only one colour.

Therefore when you change the colour on a pixel, all different colours within that eight by eight grid block change to the colour you're using.

This of course means that you cannot have two different coloured adjacent pixels unless they lie either side of a block boundary. Despite this, some interesting effects have been created with multi-coloured lines!!

Sound generation techniques are very basic. BEEP is used to create a note. Duration and pitch values may be whole or fractional. machine code subroutines are applied.

The tiny built in speaker produces a distorted feeble tone, which quiet folks will regard as a blessing

There's not much more to say about sound generation except that it is rather weak compared to other micros in the same price range such as the Vic-20 or Oric-1

KEYBOARD/CURSOR CONTROL AND EDITING FACILITIES

The keyboard is awful! There are 40 rubber keys altogether with auto-repeat, fixed to a membrane keyboard. The feel is totally frictionless, resembling calculator buttons rather than keys

All reserved words are entered by "one key entry". This means that all statements, functions, commands, procedures and most characters are labelled — on or by the appropriate key — in different colours, depending on their function. Some keys have 6 functions!

Even the eight colours are labelled (in their respective colours) along the top! This type of keyword input was introduced on Sinclair's first computer, the ZX80 and has been followed through on consecutive machines ever since.

I found myself scanning the keyboard, scrutinising each key and all its labels each time I wanted to enter a keyword!

Despite this, many seasoned Spectrum users tell me that after a while you can memorise where all the keywords are — and the respective shift keys for obtaining them — and get quite quick at typing them in.

Program line editing is straightforward. There are four keys used to move the cursor up, down, left and right. Each time you enter a line, it is automatically displayed at the top of the screen in its correct line position.

A separate editing cursor points to the most recent line typed-in and this may be moved with the direction keys to point to any other line Once the cursor is positioned on the desired line for editing, one must press the EDIT key — which will display that line separately near the bottom of the screen — then move the cursor to the desired position.

DELETE will delete characters to the left of the cursor ENTER may be pressed and the line will take its place in the listing at the top.

PERIPHERALS AVAILABLE

Cassette input is via two 3.5mm jacks, though there is no remote facility for computer control. As data is being loaded into the computer the screen displays a series of moving horizontal lines within the border

One of the most important add-ons this year for the Spectrum is the microdrives These can hold up to 100k bytes per mini-floppy tape, with a transfer rate of 16k per second. Up to eight microdrives can be connected to a Spectrum, giving you 800K accessible storage.

The best part is that they're only £50 each (compare that to the price of an average 5" drive!). A Sinclair thermal printer is also available. These retail for around £40 and print at 50 CPS with 32 CPL.

One command will produce an exact copy of what's on the screen, to the printer! "Interface II" allows you to connect two joysticks plus ROM program cartridges that simply plug in.

Another powerful add-on for the Spectrum is the Micronet-800 modem. This will allow you to download software straight into the Spectrum via the telephone lines, and also give you access to Prestel's ¼ million pages!

CONCLUSION

What can you say about the [illegible] for a micro [illegible] at under £100 with 16k and under £130 with 48k, with hi-res colour graphics and sound it offers unbeatable value for money. The machine is backed up by the largest amount of games software available for any current machine and the vast majority of it is of a high quality and modestly priced. However, the keyboard is not so hot and the Spectrum's sound capabilities are [illegible]. Basic is not suitable for the programmer who wants to create more intricate games without using machine code. Having said that the Spectrum offers a wide scope for machine code applications. Finally, it's the micro that every other manufacturer wishes they had produced!

NICK AND DAVE CHIPS WITH SOME ENTERPRISE!

Well, just who are Nick and Dave? Chips, that's who — or rather, what. Nick handles graphics and Dave the sound in the much publicised Elan Enterprise micro — officially launched in October.

But now for the bad news. You won't be able to buy one until next April. Elan will be attamping to persuade you not to buy another computer before their new micro comes on the market with a £2 million television advertising campaign.

The Elan will sell at around £200 and will have a basic 64k memory, a Qwerty style keyboard and a novel addition of a built-in joystick for playing games — or manipulating text.

Elan Enterprise marketing manager Mike Shirley says that the company will be making 150,000 computers a year and is aiming for a 10 per cent share of the British micro market. He added that Elan wanted to produce a machine better than the BBC and sell it at half the price.

If you want to you can join the Elan users club even before you've laid a finger on the keyboard of one of these mysterious machines. The club promises newsletters and special offers for potential Elan users.

As for the rest of us, we'll just have to wait until the Spring before we can find out just what Nick and Dave can do.

ARCADE ACTION!

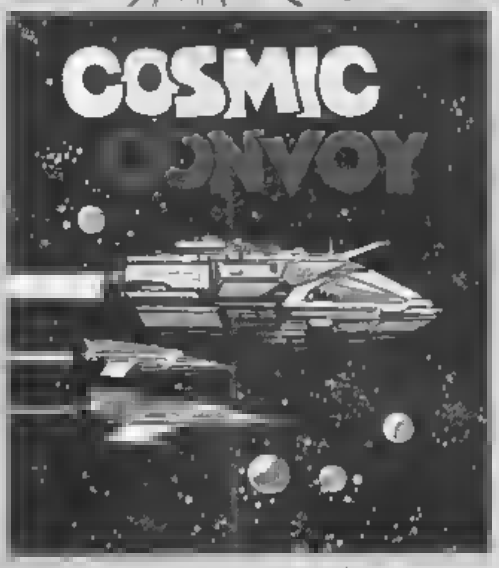
FOR THE ORIC-1

commodore 64

DIC DOC

Fast action tunnelling as Max the Mutt races for his long-buried bones. Run like hell through this 100% machine-code game. Dodge and turn — if you're quick and smart you'll survive — hang around and we'll throw you to the rats!

Very adictive



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SCREEN GEMS

The *Computer and Video Games* review team has been hard at work throughout 1983 bringing you news of all the top games for all the popular computers. On this page we take a look back at games we have tested during the past 12 months and pick our favourites. So once you've chosen your micro — using our Games Guide of course — you'll be able to select games software to go with it!

SPECTRUM TOP TEN

JET PAC Fly around the planet gathering pieces of space craft. When assembled and fuelled blast off to another planet Ultimate £5.50

MANIC MINER Miner Willy has to climb twenty screens of obstacles to win his prize Bug Byte £5.95

ARCADIA Several waves of aliens queuing up to attack your ship Imagine £5 50

THE HOBBIT Graphics and text adventure based on Tolkien's world famous book, Melbourne House £14 95.

JUMPING JACK Hop your little man up through a precarious series of moving platforms to find out the mystery poem. Imagine £5.50

PENETRATOR Scramble type game — fly your ship through tunnels and city skylines — bombing and shooting the radar bases and fuel dumps Melbourne House £6 95

FLIGHT SIMULATION Take off, fly, and land an aircraft with authentic flight controls. Psion £7.95

TRANZ AM Shades of Mad Max as you drive through America searching for fuel and the seven gold cups of Ultimate Ultimate £5.50

SCRABBLE Play the classic board game on this superb computer version. Psion £14 95

SPLAT! Help Zippy survive the rocks and spikes and make sure he eats enough grass to keep his strength up. Incentive £5.50

BBC TOP TEN

PLANETOIDS Brilliant version of the arcade game defender. Without doubt the finest shoot-em-up available on any micro. Acornsoft £9 95

KILLER GORILLA Help Mario climb the Empire State Building and rescue the girl from the monkey's evil clutches Program Power £6 95

SPACE ADVENTURE Explore a drifting and apparently empty space ship A graphical adventure with real time action Virgin £7 95

ZALAGA A galexians type game but with much much more ectron Squadrons of aliens swoop past and dive bomb your laser base Will test even the most experienced vidkids to their limit Aardvark £6 90

PHILOSOPHER'S QUEST Classic Dungeons and Dragons adventure cleverly written with lots of twists in the plot. Acornsoft £9 95

PAINTER A simple but very addictive game Travel round the maze tiling the squares with colour while avoiding the pursuing monsters A&F £8 00

SNAPPER Of all the Pac-man clones available for the BBC this version comes closest it's hard to believe that it's not the real machine Acornsoft £9 95

HOBBIT Text only adventure based on Tolkien s world famous book Melbourne House £14 95

STARSHIP COMMAND Save the galaxy from the evil klingons and become the Federation's top Starfleet Commander Acornsoft £9 95

COMMODORE 64 TOP TEN

HOVER BOVVER An original game involving mowing lawns, but watch out for the flower beds and your erratic dog Rover Llamasoft.

STIX Trap the roaming spark in your force field. Looks a simple game but becomes really challenging Supersoft

THE HOBBIT Graphics and text adventure based on Tolkien's world famous book Melbourne House £14.95

ATTACK OF THE MUTANT CAMELS Destroy an army of laser spitting mutated camels with your flying laser cannon Llamasoft

SKRAMBLE Earth has been taken over by an alien being. Hrs defences are formidable rockets, fireballs, meteors and dangerous tunnels have to be defeated before you get a chance to destroy him. Anirog.

ATARI TOP TEN

DONKEY KONG Carpenter Mario duels with the gorilla yet again, in a bid to save the kidnapped girl. Atari £29 95

QIX Trap the roaming spark in a force field, simple to understand but very difficult to master Atari £29 95

MINER 2049'er Help "Bounty Bob" explore the gold mine and claim it for himself Danger lurks in every mine shaft from uranium mutated creatures. Calisto £29 95

DEFENDER Landers, mutants, pods and baiters they're all there no compromises have been made in this superb all action game Atari £29 95

S S ACHILLES You must abandon your damaged space ship in the escape shuttle, but you must collect the supplies littered around the ship before it's destroyed Beyond £14 95 (disc).

ZAXXON A three dimensional defender type game. Battle through the defence forces to reach the robot Colaco £29 95

POLE POSITION You've got to keep a steady hand on the wheel even to qualify to race against Atari's top ten drivers Atari £29 95.

CENTIPEDE A copy of the arcade game where your job is to make sure the garden is free of all those nasty pests Atarr £29 95

MINED OUT Cross the treacherous minefield saving damsels in distress as you go. Quicksilva £6 95

GALAXIANS Protect your laser base from the swarms of diving bird men. Atari £29 95

VIC 20 TOP FIVE

CHOPLIFTER Rescue the hostages and fly them safely back to base Great flight graphics as the chopper banks and dives in this action packed cartridge from Audiogenic at £24.95

TUTANKHAM The hit arcade game converts splendidly for the Vic A real winner of a cartridge from Parker Brothers at £29 95

ARCADIA Good standard shoot 'em up with a variety of aliens. Imagine £5.50

OMEGA RACE A most accurate conversion of a little known — though incredibly addictive arcade game. Commodore's best cartridge at £9 99

SKY HAWK A hybrid of Defender and Scramble with exceptionally good graphics. Quicksilva £5.95

TEXAS INSTRUMENTS TOP FIVE

PARSEC Superb scrolling shoot 'em up with speech synthesis. TI's best game at £29.95

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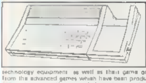
HOME COMPUTERS

20K AQUARIUS



AQUARIUS The brand new Aquarius Personal Computer is part of Mattel Electronics latest developments in advanced technology and offers full home computing facilities as well as extensive game play using a very wide range of plug in cartridges. Since Aquarius is a Mattel Electronics product, it benefits by the company's wide experience of producing high technology equipment as well as their game programming expertise which is evident from the advanced games which have been produced for the Intellivision. Aquarius costs £49 and comes with microsoft basic built in. It is so simple to use that you'll be writing your first programs within minutes of taking the machine out of its box. You can even record the programs on your own cassette recorder at home so you can use them again at a later date. Most available domestic tape recorders are compatible with the Aquarius.

A POWERFUL MACHINE For all it's simplicity, it is also very sophisticated. It has a Z80A processor and it comes with 8K of built in ROM and 4K of RAM expandable to 52K. It has a display of 40 x 24 characters and a graphic resolution of 320 x 192 with a total character set of 256 (including the complete ASCII set with upper and lower case letters, numbers and additional graphic symbols). The keyboard has 49 full stroke moving keys unlike some of the cheaper machines which have membrane keyboards. The size of the machine (excluding any of the additional peripherals), is 13" x 6" x 2".

PERIPHERALS It is very easy to increase the capabilities of your Aquarius as all the peripherals plug straight into one another. You can add a Printer, a Modem, a Data Recorder, Mini Expander and other items. All of the peripherals are very easy to install and what is more they're easy to use. But the best news of all is they're easy to afford.

CPM OPERATING CAPABILITY The Aquarius is capable of being expanded to 52K RAM and later in 1983 a disk drive will be available for it with the commercial CPM business operating system. This will allow you access to one of the largest software libraries in the world with literally hundreds of programs available for you to use.

CARTRIDGES Various sophisticated programs have been launched on plug in cartridges such as a Visicalc spreadsheet and a word processor. Other cartridges include popular Intellivision titles and are available for as little as £12.95.

4K Mattel AQUARIUS – £42.61 + VAT = £49
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£49

ATARI 400/800

NEW LOW PRICES

ATARI 400/800 With the Atari Personal Computers you can play the ultimate in T.V. games, teach yourself new subjects or skills, balance budgets, and even write your own computer programs in Basic.

SPECIFICATIONS Both the Atari 400 and 800 can display in up to 16 colours, each with 16 intensities. They have four independent sound synthesizers for music tunes/game sounds, giving four octaves with variable volume and tone control on your T.V.'s speaker. The display graphics are of amazing quality having a detailed resolution of 320 x 192 comprising 24 lines of 40 characters. Atari personal computers have a standard 10K ROM operating system. In addition to this the standard Atari 400 (£99) comes with 16K of RAM and the expanded version with 48K (£158). The Atari 800 (£249) comes with 48K as standard. Both the 400 and 800 are now supplied with a FREE £40 Basic Programming Kit which includes the Basic Programming Cartridge, as well as a 120 page Basic Reference Manual and the 184 page Self Teaching Manual by Bill Carris called 'Inside Atari Basic' so you can begin programming straight away, without buying any 'extras'. Even a mains plug is supplied!

OVER 800 PROGRAMS AVAILABLE The Atari computers are supported by well over 500 programs available for your use, a larger selection than you will find on any other television game or home computer! The wide selection puts Atari way ahead of the competition. Just fill in the coupon and we will be pleased to send you a full price list which gives details of our range of software available for entertainment, home education, programming and home office use. We think you'll agree when we say it's quite impressive.

100 FREE PROGRAMS FROM SILICA SHOP, If you buy your Atari 800 from Silica Shop, you will receive a FREE presentation pack of 6 cassettes containing 100 programs including games, utilities and demonstrations. Unfortunately, because of the low price at which we are offering the Atari 400, we are unable to give the programs with both machines. However, as a special offer, we are selling the programs to purchasers of the Atari 400 for only £14.95 less than half of the recommended retail price of £30. Silica Shop offer a TWO YEAR GUARANTEE on both Atari 400 and 800 home computers.

ATARI 400 With 16K – £86.08 + VAT = £99
ATARI 400 With 48K – £137.39 + VAT = £158
ATARI 800 With 48K – £216.52 + VAT = £249

£99

VIDEO GAMES

COLECOVISION

THE SYSTEM, The CBS Colecovision offers new standards in video game play. The excellent graphics are well implemented with arcade titles such as Zaxxon, Lady Bug, Gorf, Wizard of Wor, Carnival, Mouse Trap and the lovable Smurfs. The console comes supplied with a three screen arcade quality version of DONKEY KONG. Parker and other companies have also announced ranges of cartridges for Colecovision to further enhance the wide range of quality titles available for this new television games machine.

THE CONSOLE The CBS Colecovision video games system has advanced technology which produces superlative graphics resolution and excellent sound effects. The styling of the console and hand controllers has been carefully researched, the console is designed to complement modern hi tech equipment, and has clear features for easy operation. The hand controllers allow fingertip control via the 8 direction joystick and feature 2 independent fire buttons. The push button keyboard is used for game selection and for game control with some cartridges. The hand controllers are detachable and are connected to six feet of telephone coil cable storing neatly away in the console when not in use.

ATARI EXPANSION MODULE The Atari expansion module allows Atari VCS software cartridges to be played on the Colecovision console, allowing [illegible] purchase from the extensive range of Atari compatible cartridges. It also means that existing Atari owners can buy the CBS Colecovision games system without discarding their software library. Silica Shop offer part exchange facilities if you wish to upgrade.

TURBO EXPANSION MODULE The Turbo Driver Expansion Module allows you to actually drive the vehicle that appears on your T.V. screen. The module consists of a steering wheel, dashboard and accelerator pedal. One hand controller is mounted on the dashboard to provide a gear change unit. The module comes complete with a Turbo Driver cartridge, the first of several cartridges to make use of the module, which provides all the action of sitting in the driving seat. This facility is unique to CBS Colecovision.

HOME COMPUTER EXPANSION MODULE The Home Computer Module scheduled for late 1983 allows conversion of the games unit into a sophisticated Home Computer. This flexibility of design is an important feature of the CBS Colecovision System.

COLECOVISION £127.82 + VAT = £147

£147

VECTREX

THE SYSTEM Vectrex is a totally unique Home Arcade System which has been exclusively designed and engineered to duplicate real arcade game play. Complete with its own monitor display, Vectrex won't cause any arguments over the use of the family's television because it has its own built in screen.

THE SCREEN Vectrex does not use ordinary display techniques, instead it uses vector scanning to control the images on the screen. With this scanning method, the gun only updates the area of the screen that has changed, whereas a normal T.V. re-transmits the ENTIRE screen 50 times a minute. It is this that gives Vectrex its speed and means that very little computer power is required for screen control and the results provide very fast responding and clear images. These 'Vector Graphics' are used in several arcade games such as Asteroids and Battlezone, to give you incredibly high resolution and quality. Vectrex brings all of this from the arcade right into your living room. The Vectrex screen is capable of displaying 80 columns by 40 lines which is significant to the extensive developments planned for the system.

EXCITING SOUNDS AND ELECTRONICS Vectrex has an advanced microprocessor with more speed and power and exciting effects than many home video games systems.

[illegible] Vectrex has a unique control panel, similar to those used in many real arcade games, with 4 concave action buttons and a full 360° self centering joystick. This control panel has a 4 foot detachable cord for maximum player freedom.

REAL ARCADE GRAPHICS Vectrex has its own 9 inch vertical screen and unlike a conventional T.V. screen uses advanced display technology to achieve brilliant high resolution imagery and superb game play never before possible. The Vectrex display provides special effects too, such as 3-D rotation and zooming in and out, which a regular T.V. cannot match. Using a black and white monitor, each Vectrex game comes supplied with its own coloured plastic screen overlay to add to the excitement of game play. The range of Vectrex cartridges (£19.95 each), gives a good selection of arcade games such as Berzerk, Scramble, Rip Off and Bomber Attack. Vectrex comes complete with a fast paced 'Minestorm' game built into memory.

VECTREX: Vectrex has an advanced state of the art microprocessor with more speed than other T.V. games.

VECTREX – £112.17 + VAT = £129.00

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[illegible]

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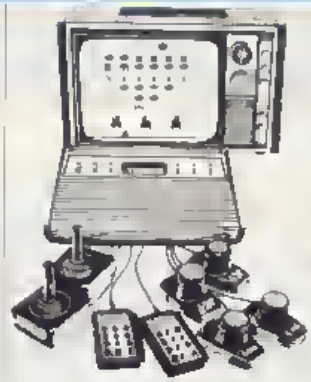
VIDEO GAMES



ATARI

ATARI VCS (2600) – THE NO 1 BRAND LEADER IN THE U.K.

ATARI The Atari Video Computer System known as the Atari VCS or the 2600 has now become the T V game brand leader in the U K there are over 700,000 owners of the VCS with access to a range of over 200 different plug in cartridges each having a multitude of different variations and difficulty levels Every system comes complete with the main console two individual joystick controllers, a pair of paddle controllers, aerial splitter, mains adaptor a 27 game Combat cartridge and a **FREE PAC MAN** cartridge which is worth £29 95 The console also incorporates special circuits designed to protect your T V

SECONDHAND GAMES We currently have several secondhand Atari VCS units in stock which we are selling for only £39 (inc VAT) This price includes the Console with Combat Cartridge and all the accessories, as well as a 12 month guarantee We also have stocks of several secondhand cartridges many at half price (all with 12 month guarantee) We will normally buy back secondhand units and cartridges at ¼ of our normal selling price **£39**

EXTENSIVE CARTRIDGE RANGE The Atari VCS is so popular that in addition to Atari's own cartridges there are over 150 compatible cartridges produced by at least a dozen different third party manufacturers Silica Shop has one of the largest cartridge selections available in the U K Our range of over 200 titles (printed either side of this column) includes items in stock now, as well as many of the new releases for late in 1983

SILICA ATARI CLUB Silica Shop has over 20 000 Atari VCS club members registered on our computer As a specialist company we are able to obtain advance information about new developments and mail detailed catalogues to all of our club members enabling them to evaluate new products before they buy This is a totally FREE service, to receive your copies complete the coupon below

SERVICE CENTRE Atari International (UK) Inc has recently appointed Silica Shop as an authorised Atari Service Centre This means that we can now service your Atari VCS or 400/800 hardware regardless of applicable whether or not you purchased it from us

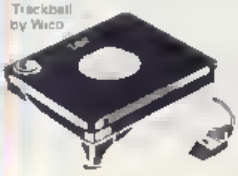
VCS COMPUTER KEYBOARD A keyboard will soon be launched to convert the VCS into a fully programmable home computer For further details join our club by completing the coupon below We will then let you know when further information is available

STARPATH SUPERCHARGER The Supercharger costs only £29 and plugs into the cartridge socket of your VCS and expands its RAM almost 50 fold, from 128 to 6,272 bytes This increased memory capacity lengthens the game playing time Supercharger has a range of £17.95 multi load games offering the facility to play a game in several distinct parts (great for adventures), the next section being loaded only when you have completed the previous one For a detailed Supercharger colour catalogue please complete the coupon below

ATARI VCS CONSOLE – WITH COMBAT AND PAC-MAN £60 + VAT = £69 **£69**

ACCESSORIES

We stock a wide range of accessories for the Atari VCS and 400/800 personal computers The same accessories can be used on the Commodore VIC range of computers The Wico range can also be used with the Texas Instruments computers on purchasing a special adaptor To give you an idea of the range available just take a look at the following list



Trackball by Wico

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QUICK SHOT This joystick features a contoured handle grip thumb trigger and optional base fire button It is supplied with 4 sure foot suction grips

STARFIGHTER Neat and compact with a small direction stick Metal shaft for added strength

VIDEO COMMANDO With a tapered handle, this joystick is for one handed use It has a directional control which is similar to a jet fighter joystick

WICO RED BALL An arcade type joystick with a red ball handle It features 2 fire button location one at the base and one on the stick It comes supplied with a grip pads for easier table top use

Wico Straight Stick with Stick Fire Button

WICO STRAIGHT STICK The main feature of this joystick is its arcade style bat handle grip It also has 2 fire buttons Four grip pads included for table top use

WICO TRACKBALL A true arcade style trackball for use with your Atari or Commodore VIC This product is designed to give arcade control in your living room

12' EXTENSION LEAD A 12 extension for Atari and Atari compatible joysticks for greater player freedom

MATTEL INTELLIVISION

MATTEL INTELLIVISION The Mattel games unit is a most versatile T V game which offers 3 D graphics quality for only £98 Each cartridge comes with 2 overlays which fit over the unique hand controller aiding easy direction for game play Using the handset's control disc objects can be manoeuvred in 16 directions to give an accurate simulation of lifelike movement From 1st September 1983, the Mattel Intellivision T V Games Console will come with a voucher which entitles you to claim a **FREE VOICE SYNTHESIS MODULE**, normally priced at £50 This unit allows speech as part of game play on certain cartridges

NEW MATTEL CARTRIDGE RELEASES Why not complete the coupon below and get the Mattel Owner's Guide sent absolutely **FREE** Also in the list are full 8 page catalogues detailing many Mattel releases There will be a new cartridges available for the Mattel and a small charge on each shown in bold below

MATTEL Archie Scores Burger Time Buzz Bombers Chase Cloudy Mountain Dracula Fathom Frog Bog Happy Trails Hockey Horse Racing Mind Strike Night Stalker Space Battle Space Spartans Star Strike Tropical Trouble Utopia Water Ski Winter Olympics **ACTIVISION** Boxing Checkers Fishing Derby Kaboom! Pitfall! Plaque Attack Robot Tank Seaquest Skiing Stampede Tennis Video Pinball **H.S.** Blue Print Commando Donkey Kong Donkey Kong Jr. Gorf Mouse Trap Popeye Space Hawk Turtles Venture Wizard of Wor Zaxxon **IMAGIC** Atlantis Beamrider Demon Attack Dragon Fire Fathom Microsurgeon Night Driver Star Voyager Trick Shot **PARKER** Action Force Astroblast Beam Rider Boxing Cosmic Commando Frogger Ms. Pac-Man Q*Bert Sky Jinks Slap Shot Super Cobra Tutankham Up 'n Down

COMPUTER KEYBOARD In November 1983, Mattel will be launching their new £89 49 key computer keyboard attachment called LUCKY which is fully programmable and has microsoft basic built in It will transform your Mattel Component into a home computer The adaptor also accepts 6 note polyphonic music synthesiser and full size 49 key piano keyboard that will make learning music as easy as playing games

MATTEL + VOICE – £85 22 + VAT = £98 00 **£98**

VIDEO GAME CLUB

In a fast moving market like video games, it is difficult to keep up to date with all the developments that take place With new programmes and accessories being introduced at a fast rate by several different manufacturers, it is impossible to get all the information you require from one manufacturer alone It is for this reason, that we have set up owners clubs for the more popular video games and home computers, to keep you fully up to date with what is going on with your personal machine As far as we know, Silica Shop are the only company to offer such clubs but that is not surprising since we are the specialists We currently have **FREE** clubs for the **Atari VCS, Atari 400/800** home computers and **Mattel Intellivision** Soon we will have clubs for **Colecovision, Aquarius** and **Vectrex** So if you own one of these machines fill in the coupon opposite and we will send you **FREE OF CHARGE** all the club relevant to your computer or video game

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FREE LITERATURE – Please send me your FREE LITERATURE and catalogues on the following items

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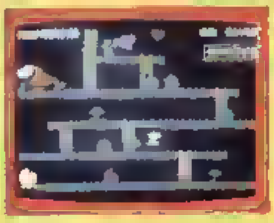
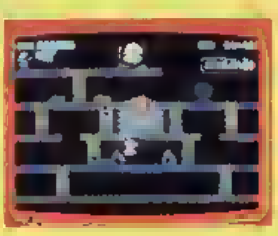


1
CHASING FIREBALLS AND BARRELS CAN BE SMASHED BY THE MALLET IF YOU CAN JUMP UP AND GET IT



2
JUMP OVER THE PIES AS YOU RUN ALONG THE CONVEYOR BELT MAKE SURE YOU DONT END UP INSIDE THE COOKER

3
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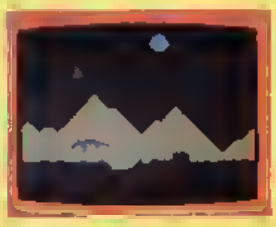

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GRAPHICS

By Garry Marshall

MAKE THE MOST OF SPRITELY TEXAS!

Sprite graphics are becoming available on more and more personal computers, including the Texas Instruments TI99/4a, the Commodore 64, the Sord M5 and the Atari computers.

A newcomer to sprite graphics may wonder what all the fuss is about, and can have difficulty in finding out exactly what a sprite is.

The manual for Texas Instruments' Extended Basic, for example, says only that "sprites are graphics that can be displayed and moved on the screen".

This isn't very helpful. I'll try to explain what sprites are so, armed with this knowledge, you will be able to make full use of them.

A sprite has much in common with a graphics character in that it has its own shape, colours, and can be displayed on the screen.

Although it has other properties than these, a sprite usually exceeds an ordinary graphics character even in these aspects. The first way that it does this is in its positioning on the display screen.

Whereas a graphics character can be placed only in character positions, a sprite can be placed at any dot position. That is to say, its top left corner can be positioned at any dot on the screen.

Because of this a sprite can move smoothly over the screen, while a graphics character inevitably jerks from position to position when it is moved. Secondly, a sprite can be much larger than a graphics character so that its shape can be designed in much more detail.

On the TI99/4a, for example, a sprite can be the same size as four graphics characters, and on the Commodore 64, where characters have an 8×8 dot matrix, sprites occupy a grid of 24×21 dots.

What makes sprite graphics really exciting and different from ordinary graphics, however, is that a sprite can be given a speed and a direction in which to move with a single instruction.

Once this instruction is issued, the sprite is automatically kept in motion in the specified direction and at the given speed without the need for any further action on the part of the programmer.

WHEN SPRITES MEET

This is invaluable in programming a wide range of games. As well a this, with sprite graphics a three-dimensional effect can be achieved with some ease because a sprite can be assigned a level of importance.

When two sprites meet each other the more important one passes over the other so that it can always be seen on the screen while the less important one is obscured.

So, in a game where a spaceship is flying past a planet, if the sprite for the spaceship is more important than that for the planet, the spaceship will appear to pass in front of the planet whenever they meet.

Sprite graphics systems provide the means for manipulating sprites in many ways. To give just one example, they can usually detect automatically when two sprites meet each other.

On the TI99/4a this is done with the CALL COINC sub-program and on the Commodore 64 by examining memory location 53278, although when using Simon's Basic on the 64 a DETECT command is provided for this purpose.

Next issue I'll be bringing you more information about the graphic capabilities of your computer.

NOW, READ ALL ABOUT IT!

Books on video games for micros are now very common. Usually they consist of program listings for a particular machine, and they may or may not include reasonable explanations of how the programs work.

Good examples of this kind of book are the *Commodore 64* Games Book by Clifford and Mark Ramshaw (Melbourne House) and *The Spectrum Book of Games* by M. James, S. M. Gee and K. Ewbank (Granada).

You can learn a lot about programming in Basic by typing into your computer the programs in books of this kind, as well as having the fun of playing the games. And if you don't want to be bothered with the typing, many of the books have an associated cassette containing the games programs which you can purchase.

However, I've been looking at a volume on games and graphics that is quite different from the usual books, and which is an exciting source of many and varied ideas. The book is *Pascal Programs for Games and Graphics* by Tom Swain, (Hayden Book Co.), price £15.95.

First, don't worry that the games are written in Pascal rather than Basic, for this is an advantage, or can be turned to advantage, in several ways. The use of Pascal means that it is very easy to see how the games are written.

In fact, once you have digested the formalities of Pascal, which needn't take very long, the Pascal programs can be regarded as precise descriptions of games. This opens the possibility of converting them to Basic, perhaps after amending them to suit yourself, which is surely more fun, and more instructive, than simply typing listings.

The games in the book have names like Lasergraph, Moonport and Light Bikes which indicate rather well what they are about. In fact, the games are a decided improvement on what is usually found in the books of Basic listings.

The graphics are also impressive, and enhance without fail the games in which they appear. They are written for the Apple II and IIe computers, but can readily be adapted to any other computer with a similar graphics capability.

The book also gives listings for a graphics editor with which graphics can be designed and then saved.

Once a graphics display is saved it can also be manipulated and printed out or, if you are lucky enough to have a plotter, it can be plotted.

This capability for handling graphics is invaluable to any programmer who uses graphics a great deal. While it will not be particularly easy to adapt the suite of programs for the graphics editor to Basic the attempt will be very rewarding, and the Pascal programs do show very clearly how it can be done.

All in all, *Pascal Programs for Games and Graphics* is a highly stimulating book full of ideas for games and graphics. As an extra bonus, if you have ever wondered what Pascal is all about, or if you have wanted enlightening about structured programming, the excellent programs in this book can throw a good deal of light on both matters.

Finally, two books have appeared recently that contain numerous illustrations showing what is possible with state of the art computer graphics. They are *The Computer Image* by various authors (Addison-Wesley) and *Computer Images-State of the Art* by Joseph Deken (Thames and Hudson). They contain examples of images from areas such as computer art, modelling, simulation, computer-aided design, computer-aided manufacture, mapping and even choreography — done on an [illegible].

Although both are more than picture books, their illustrations show the incredible computer-generated images that can now be produced in the wide range of areas where computer graphics is used.

Easy to play, hard to beat, impossible to equal.

In numerous magazine surveys, and in a national daily, one chess computer was constantly named 'best buy.' The same computer, rated for skill by the U.S. Chess Federation, was officially placed in the top 15% of all club players.

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PLUG-IN LIBRARY

Another of the Sensory 9's important features is its ability to accept an increasingly wide range of plug-in cartridges, to update and enhance the computer's capability

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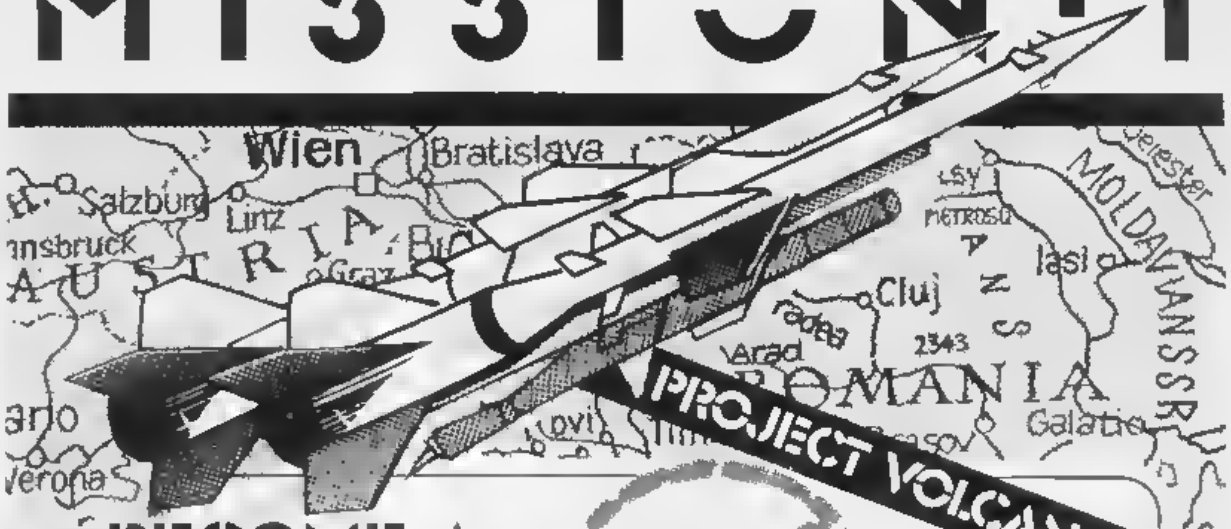

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CHRISTMAS CRACKER!

BY KEITH CAMPBELL

"What are you thinking of doing for the Christmas issue?" asked Tim, our production editor, always eager to tick off unfilled pages.

I nearly choked on my coffee. With the August heat making me sticky with perspiration, nothing could have been further from my mind than Christmas. But words have to be written long before the magazine reaches the newsstands, so I shut my eyes and thought of snow.

The heat pouring in through the window became a blazing log fire, and the pub lunch settled in me like Turkey and Christmas Pud. I pictured the telly, the Queen just finishing and the obligatory Christmas circus about to start. Circuses! Ghost stories! Eureka! My Christmas review!!

I so startled the office that Linda pasted a title upside down, and Clare stopped dead in the middle of a Rebecca Corwell letter . . .

Your car out of petrol rules from anywhere, empty can in hand, you cross the fields in the gathering dusk.

Suddenly you come across an unnerving site — a big-top complete with all the usual trappings — a generator, maintenance wagon, and animals. Entering the tent you find the ring, where all is deserted. But wait! Is that a clown running off into the shadows?

What to do now? To pass the time, here's a chance to become a circus artiste. Tame the cats, try your skill on the trapeze, and maybe walk a tightrope! I found I made a rather nasty mess on the canvas when shot from the cannon, but my tightrope walking is coming on a treat! I no longer get killed when I fall off!

What's the point of it all? To discover that, you will have to play *Circus* for quite some time, and to reach your goal, even longer!

Circus is one of Brian Howarth's *Mysterious Adventures*, and did, on occasions, send a cold shiver down my

MADNESS MINOTAURS AND A PHILOSOPHER

Help is at hand for David and Joan Symonds, thanks to two players of *Madness and Minoteurs*. Mushrooms do come into the game later, but for now — simply find the small lamp on the first level and type "LAMP ON". You can then descend!

"I can understand their agony," writes Robert Moss of Basildon. "The criminal thing is that one single command will change everything."

W. Pooley of Liverpool also sent in this tip, and in return requests help in *Jerusalem Adventure*. Any offers on how to get through the Golden Gate?

Some pleas I receive are quite difficult to satisfy. But I try my best so here goes!

Attention Mrs Oxley of St Andrews, Fife. I hear that you have taken over your son's *Espionage Island*. Shame on you! Take it from me, it's no use sitting up till 2 a.m. trying to kill the native woman. Play the game, or rather, stop playing the game, and let David have a go!

Here's another difficult one. Simon Marsh from New Malden says some very flattering things about the Adventure feature, suggesting that I take over the whole magazine! He offers some criticism though — "I notice your pages are coming under attack from Spectrum owners. Please don't let them take over, like they have in xxxxxx Computing xxxxxx," he implores, "e.g. NO HOBBIT PROBLEMS!!!" Over 100 pages with no mention of Hobbit, Simon? Impossible! It's the most popular game in the world — isn't it?

Can anyone get choeso in *Philosopher's Quest*? Or find David Somekh of Wanstead a shaggy dog after giving a woman a less shaggy one? Come to think of it, has anyone completed *Philosopher's Quest* yet?

Denis Field of St Albans can't escape the *Castle of Riddles* courtyard. Directions N, E, and W all lead him to very short-lived excursions. Is it the same for you too?

Dark Crystal is a game seldom mentioned in despatches, so any offer of help for David Johnston and Gareth Dart of Gwent would be much appreciated.

Special hints are printed upside down — but there are other clues hidden, as usual, within the reviews and chit-chat. Those who know the answers will no doubt recognise these. If you are searching for help about a game mentioned here, study my words carefully — even the headlines may help!

Help is also at hand for me, now. Your letters are starting to pile up too high too fast. I like to ensure each of you gets a reply, so I turned the tables on my most prolific correspondent, and persuaded him to give me a hand.

Welcome to Simon Clarke, whose name you may have seen a few times in the Helpline section. I gain the double advantage of having less replies to write, and no more problems from Simon to worry about!

So if you are stuck, or can help "unstick" an Adventurer in distress, write to me at Keith Campbell's Adventure Helpline, *Computer & Video Games*, Duttant House, 6 Retbal Hill, London EC1R 5JB. I shall continue to receive and read all your letters, but will pass some of them over to Simon to answer.

A Happy Christmas to Adventurers everywhere. And if yours is a Christmas Pudding stuffed with treasures, don't forget to LOOK and EXAMINE things carefully, before you eat!

HELPFUL HINTS

Use the telescope in the observatory, the deaf-aid in the oil drum, and the megaphone in the echo chamber. You'll receive a poem as a reward — could it hold a clue?

MOVE something heavy to lead to a new object. (a ,,paw'' clue I'm afraid) than drop it in the only place possible before trying to lift the curse.

NERVOUS BREAKDOWN?

Is Pimania causing brain damage? Paul Smith of Cheam, fell into a dead faint after offering to become a life subscriber to *C&VG* and the complete solution to Adventure B, just to find out how to open the gate. He's lucky because he's obviously playing on a Spectrum.

John Yeates, a self-confessed BEEB Pimaniac from St Clements in Jersey, says only "PI. AAAGH! SPLAT!" And well he might

Some early versions of Pimania contained a bug which makes the game impossible to solve. Only about fifty of these were sent out before Automata spotted the bug and contacted the people who had so far purchased the game. If you suspect you have a bugged copy contact Automata now who will be happy to replace the tape and refund your postage.

Meanwhile Chris Hant offers some clues, and asks for help in getting past the foothills, into the sewers, and opening the sluices. Chris reports that he has taken note of the shape of the map, as suggested by Neil Duffin. It resembles a Giraffe, says Chris.

CONFESSIONS OF AN ADVENTURER

Following the scandalous July revelation of my defeat at the hands of *Mystery Fun House*, I am pleased to announce that I do not have to make a similar degrading admission about *Voodoo Castle*.

The object of this game is to lift the curse placed upon Count Cristo, and the player has to piece together clues on how to do this, whilst finding the necessary objects to enable him to peform a "grand finale" around the coffin.

There are problems with witches brew, some explosive chemicals, a chimney and a ju-ju bag to name but a few. And what is that raven doing outside the self-shutting window?

Great fun until you get stuck — and there are some very sticky places! The trouble is there are also some red-herrings to add to the bafflement factor.

Voodoo Castle, written by Scott's wife Alexis Adams, IS available for the Vic-20 (!), and has been the steady source of desperate letters for some months.

"I've done what it says" writes Andrew Bathelf from Walsall, "and nothing happens. If I don't lift the curse soon I shall drink the witches brew and we all know what happens then, don't we?"

A good demonstration of how Alexis can be every bit as mean as Scott, for there is one deed to perform that is not mentioned in the clues you collect!

Shaun Chetwood from Telford and Margaret Booker from Chesterfield have both written about *Voodoo*. Margaret, playing the game with eight others since last Chrismas, was especially desperate.

Her husband was refusing to let her buy another advanture until *Voodoo* was solved. I rushed her, and Shaun, a reply framed to help them re-start without giving the whole game away! I also suggested that Margaret might try *Adventureland*.

Back came two more letters. Mr Booker had bought *Adventureland* for Margaret (proving that a word to Help-line CAN be rewarding!), but both she and Shaun were still independently stuck in the same place! Both queried whether their Vic cartridges might be faulty or different from my TRS-80 version.

I began to wonder the same myself, until, having spelled things out in detail to Shaun, he soft-footed it back to the coffin, and was soon in clover! His last letter made moving reading!

Voodoo Castle is available for TRS-80, Video Genie, Vic-20, Apple, Atari and TI99/4a. The clues I passed on to Shaun and Margaret are available for all *C&VG* readers, upside down!

spine. For the mysterious inhabitants of the circus are doomed to languish in eternal captivity unless . . .

Not an easy game to complete, and ideas are needed to solve it. A point obviously not missed by the author, for if in frustration you use words best not printed here, the computer will reply "What a foul mouth you have!"

Every similar in presentation to a Scott Adams adventure, *Circus* can be recommended as Christmas fare to almost all Adventurers. *Circus* is available for a wide range of systems, including 48k Spectrum, BBC (A or B), TRS-80, Colour Genie, Atari 400/800, Commodore 64, Dragon 32, 16k ZX81 and Lynx. The supplhere vary from micro to micro, so would-be purchasers should scan the adverts.

And now I must get back to start that generator — time to turn on the Christmas tree lights!

DAN DIAMOND PRIVATE EYE

Whoever Faint-hearted Franklin is, he made certain he would be comfortable in his after-life. That is quite evident to anyone venturing into his tomb, an experience available to Dragon, Oric, and BBC owners.

The case file that comes with *Franklin's Tomb* takes up the story of Dan Diamond, American private Dick with a taste for Courage beer and jokes of a similar standard. But this had little to do with the Adventure that I, as Dan, was about to play.

I played the Dragon version, and thought the game started off in a rather mundane way, with a small puzzle to solve before getting access to the tomb proper.

The display was split rigidly into location description (top left), displayed inventory (top right), and conversation (bottom four rows). It looked rather stodgy, the response was slow, and I nearly didn't bother to continue playing.

A case of first impressions being misleading, because it soon became apparent that the response to location-changing commands was very prompt, abbreviations N,S,E, and W making moving around quite a slick procedure.

The response time varied considerably depending on the command, and averaged-out, was quite acceptable. Lack of cursor (my pet hate!) was partially compensated for by an obliging 'beep' when the computer was ready for more input.

Having entered the ornate doors leading down, I set about exploring the crypt.

Here was a large area for exploration. The network was easy to get around and interesting to tour. You could visit an Aquarium (permanently?), tour a gallery of murals, play a juke-box (got the coin?) and listen to Franklin and the All Stars, treat yourself to a steam-bath and much much more.

Very entertaining stuff — but all the time you might wonder what the objective is, until and unless you have visited the right place. Once visited, the search is on in earnest, for you know what you need but not how to get it all!

"The best Adventure I have seen for ages!" commented Neil, my 15-year-old son. I was inclined to agree with him! Definitely an acceptable Christmas present for any friendly Dragon.

The game is written in Basic and unfortunately the BREAK key is not disabled. I say "unfortunatley", because if you accidentally hit BREAK the fixed display will be spoiled. To recover, simply type GOTO 350, and then drop an item you are carrying to relist your inventory. Don't list the program or believe me, your fun will be spoiled!

The cassette comes complete with an 18 page 'case file' which includes pictures of many of the text-described locations.

Franklin's Tomb is from Salamander Software of Brighton, and available for Dragon 32, 48k Oric, and BBC 'B' micros at £9.95 from a number of suppliers. A sequel is promised — I can't wait!

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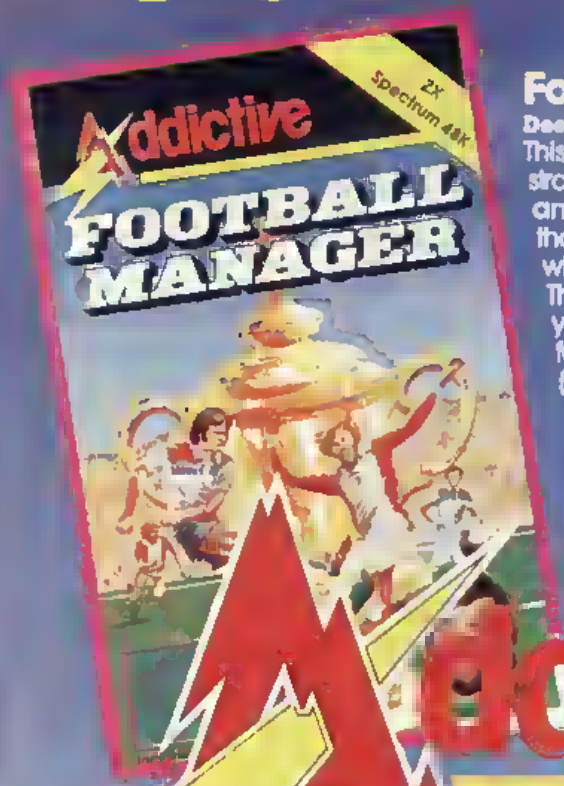

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When I first received this game I spent the best part of the weekend playing it Since then I have returned to it more often than any other The truly addictive quality of this game is the remarkable way it mirrors the real football manager's problems "(Personal Computer Games – Summer 1983)

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THE SHAPE OF GAMES TO COME

LASER GAMES

New realms of action and adventure will be opened up by the arrival of laser-disc games in your local arcade.

Gone are the days of one-dimensional computer video graphics. Now you can play space games against a backdrop of real stars or blast around a real race track while sitting safely in the confines of an arcade machine.

Laser games will revolutionise the flagging arcade industry if reactions to the several machines on show at a recent preview of what's new for '84 are anything to go by.

We've already mentioned laser games in these pages — but now we can also bring you pictures of what you can expect to see. You'll be amazed — believe us!

It all began with Sega's Astron Belt — already in action in some arcades around the country. It puts you in control of a video-graphic ship blasting through space created by images stored on the laser-disc.

You fight alien ships, fly through dangerous rocky canyons, attack alien ground bases on mysterious planets — and it all looks as if you are watching the action on TV and not playing an arcade game at all! Astron Belt also has another added-extra — the Vibra-Saat! If you blast an alien ship out of the sky

computer-style graphics than Astron Belt and is therefore not quite so stunning as its predecessor — but is still a good game nonetheless.

Moving back to earth Taito have entered the laser-disc race with a Grand Prix racing game called Laser Grand Prix.

A video car is superimposed on film of the Japanese Mount Fuji international race track.

You race against other video cars in an extremely realistic simulation of a formula one race. The roar of the engine and squeal of tortured tyres as you attempt to take the bends at top speed all add to the illusion.

The games' opening demo is pretty neat too — with the video car being transformed into a real race car as it streaks over the start line.

Laser Grand Prix also features bonus screens for winners — like the Spark Race, a night driving challenge and the Fantastic Race, a trip into the realms of fantasy still in the seat of a race car. The game comes in a large car cockpit type cabinet — so you won't miss it if one arrives in your local arcade!

However, the undoubted star turn of laser games at the moment has got to be Dragon's Lair — a fully animated sword and sorcery adventure with a touch of Tom and Jerry thrown in for good measure.

Dragon's Lair is the story of Dirk the Daring, a brave knight who faces many trials and tribulations in his quest to rescue a beautiful maiden from the clutches of a fire-breathing Dragon.

You control the actions of Dirk the Daring and attempt to keep him alive in his struggles against evil wizards, giant black rats, deadly bugs, monsters and much much more. Dirk can face up to 600 different challenges in 40 different locations before he gets to the dragon — but you will have to spend a lot of cash to see them all!

The controls are fairly simple — a joystick moves Dirk backwards and forwards while "action" and "sword" buttons control those aspects of the game.

the seat shakes just as if you were caught up in the backwash of the explosion. Quite an experience!

Following a similar space theme is Interstellar from Funai. This takes you across strange alien deserts on lost planets and pits you against fleets of alien craft. Interstellar uses more

WHAT'S NEW DO-BE-DO-BE-DO!

MR DO'S CASTLE

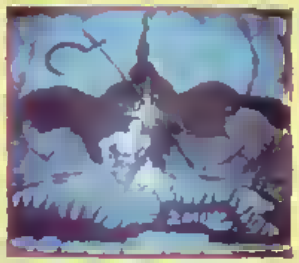
Mr Do! was tremendously popular in arcades and now has a follow-up. Mr Do's Castle is the continuation of his adventures.

Mr Do has to exterminate unicorns invading his castle. He does this by dropping a block with a hammer which knocks unicorns into a hole, or more simply by dropping a block on top of the beasts.

Mr Do can gain extra power from blocks marked with a death's head. This exterminates several unicorns at one attempt. Otherwise Mr Do has to avoid the pursuing unicorns by pulling up ladders behind him as he moves around the screen.

Bonuses are provided by dropping three blocks marked with keys which brings a shield into the highest window of the castle. If Mr Do can wipe out the shield the unicorns change into "EXTRA" and by wiping out the "EXTRA" with a hammer or by dropping on it, a flag runs up a pole. Run up five flags and another Mr Do appears.

At this stage of the game — continually more challenging — the final unicorn changes into several blue unicorns which are faster and more ferocious and if Mr Do survives them for 30 seconds they change into double unicorns and it takes a very skilled player indeed to survive their attack.



You have to use the controls at precisely the right moment — or Dirk will die an agonising — but often amusing — death.

And all this action is presented in cartoon style visuals. It's just as if you were watching a Disney cartoon adventure on TV — except that you are in control of what happens next.

Photographs by Max Bradley

Lasers IN COIN

As you've probably guessed by now it's very hard to do Dragon's Lair justice by simply writing about it. It's definitely a game that has to be seen to be believed! That's where our pictures will help.

Dragon's Lair comes from Starcom, a division of Advanced Microcomputer Systems, the video game company whose Space Wars machine set the scene for the sci-fi arcade game boom in the late 1970s.

The company who created the amazing animation for Dragon's Lair strangely wish to remain anonymous — but American sources say that it is the work of Don Bluth who was behind the animated feature film *The Secret of Nimh*.

One and a half million dollars was spent on software alone for Dragon's Lair — $250,000 is the usual development budget for a video game. So that's why you are going to have to fork out more of those 10 pence pieces to play the game.

But before we go too wild about Dragon's Lair it does have its drawbacks — the price to play being the first.

It's going to be a difficult game to learn too — adding to the expense.

On the technical side — when you switch from location to location or situation to situation, there is a nasty glitch on the

screen, just like when you change channels on your TV. This is caused by the speed of the laser scanning the disc — it simply isn't fast enough. Yet!

A way around this would be to use two discs tied into the machine's computer memory. But this would again add to the cost.

Having said that Dragon's Lair is still a big jump in games technology. And, so say the experts, there's much more to come.

Victor Penman, the man who watched over the creation of Dragon's Lair reckons that the next generation of games will

involve other senses — smell, touch and possibly taste to enhance realism of the games. We'll just have to wait and see!

A new Dragon's Lair style game is due in the Spring.

Another sword and sorcery theme laser game is called Eon and the Time Tunnel in which the player travels through a movie landscape of dark mysterious castles and alien cities. We at *C&VG* haven't managed to see this one yet — but you'll be the first to hear about it when we do.

Rumours have been filtering through from the States about film crews lurking secretly in the Grand Canyon and a science fiction special effects company working on a special 3D process for forthcoming laser games.

It's only a matter of time before this laser technology makes a switch to the home micro market. It could be that arcade machine manufacturers will be selling their laser discs — or adaptations of them — to run with popular home computers fitted with a special interface.

You might even be able to get an arcade style cabinet for your home — and change games by simply switching the laser disc!

And then there's the possibility of linking up cable TV and laser disc technology. The possibilities seem endless.

Make no mistake — the Laserdisc will revolutionise games playing in the next couple of years. Maybe programmers will have to learn to use film cameras or become animation experts instead!

It all seems such a long time ago that these first little green aliens flickered across the screens of a hundred machines announcing the dawn of the video age. Next stop — the age of the laser!

A wide range of new and not so new pin-tables went on show at the recent Preview 84 arcade show held in London.

For me, the star of the show was Bally's Centaur II — the latest in the long line of remakes. It seems only yesterday that the original hit the arcades.

This pin has all the attraction of the original — the striking black and white playfield, many special features and the growling Centaur voice. In fact it's difficult to see what — if anything — has changed, apart from a smaller backsplash and a re-arranged digital score readout. It still retains all its old addictiveness and playability.

Also from Bally comes Gold Ball — is this a remake of Silver Ball? This is a fairly basic pin with some nice features. But I didn't get to play it long enough to see if that tedious "gold" ball makes an appearance — like a "silver" one did in that first pin.

Award for the worst looking pin-table of all time must go to Zaccaria. This awful creation was covered in flower-power style artwork and was called something like Love. I could be wrong, it was difficult to work out the name from among the multi-coloured floral patterns.

Those dreadful patterns repeated themselves on the split-level playfield. Each pot-bumper even had a dainty little flower painted on top of it! As to playability — if you can put up with the assault on your eyes — you might be able to enjoy an adequate game. It speaks to you too — but I couldn't quite make out what it was trying to say.

Next issue we hope to bring you news from the Pinball Owners' Association convention, where among other events, the new Pinball Wizard will be chosen from among the ranks of pinball aces who belong to the association.

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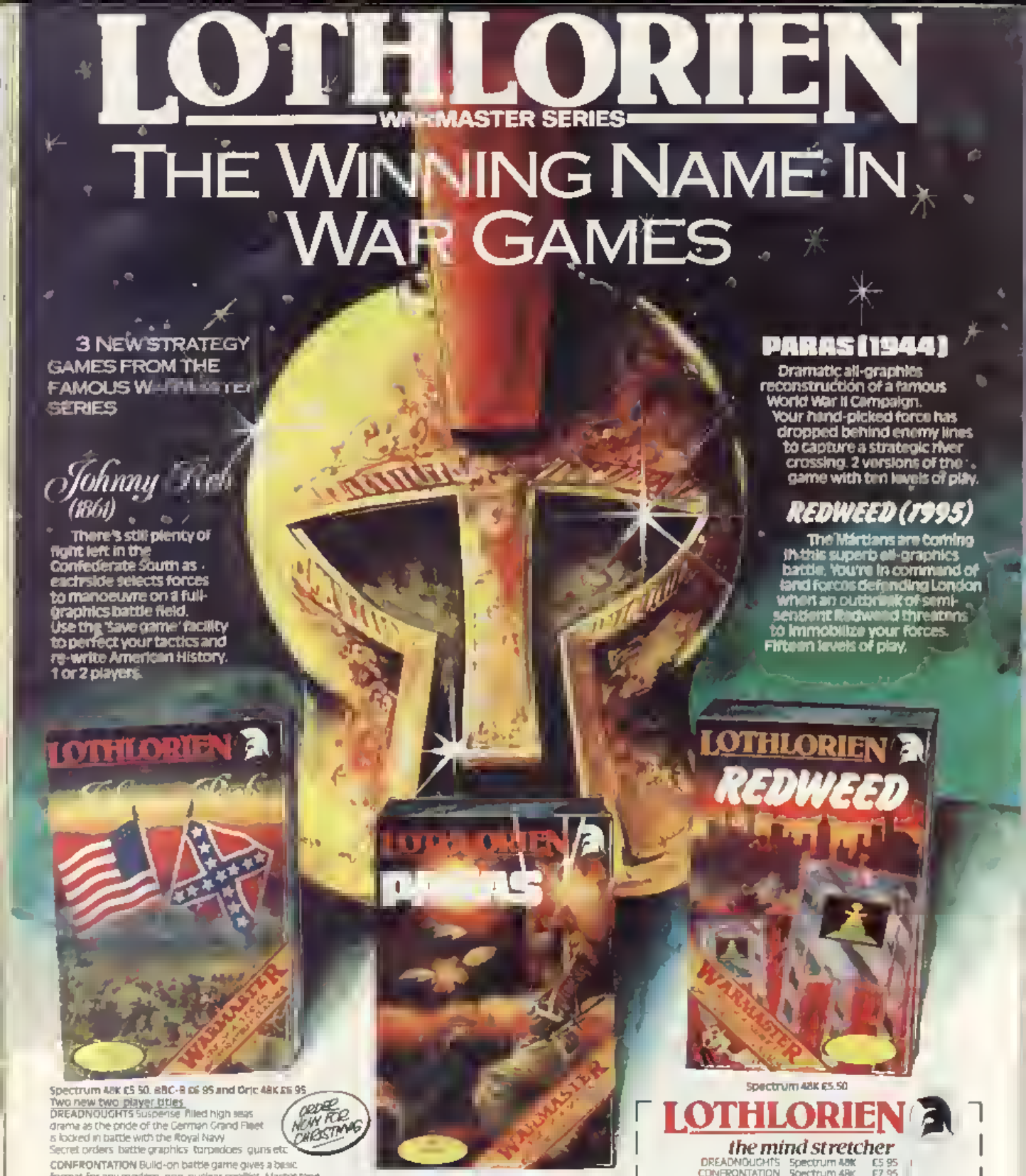

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GAMES without TEARS

Once upon a time if you wanted to write a good game then you needed to be a good programmer. But not any more. Programs are appearing which allow you to create games without knowing anything about the computer. Robert Schifreen tested the two latest offerings.

If you've always fancied yourself as a designer of video games but don't think you are skilled enough to program your own games, then this new software innovation might interest you.

Called *The Games Designer*, this program allows you to design your own video games — even if you know nothing at all about programming! The games are all in machine code and, says the maker, will be as good, if not better than most of the commercial software currently available for the machine.

If all this sounds too good to be true, then you should realise that there are some limitations to the system. Firstly, you cannot design your own *unique* game from scratch. You are only allowed variations on the theme of Invaders, Asteroids, Scramble and Berserk

Once the tape has loaded, you are presented with a menu of options. At this point, there are 8 separate games stored in the system and you can select any one of them. The games are not stand-alone programs but are banks of data which need the actual designer program to run. A game can be saved and loaded once written.

You can either alter one of the 8 demo games supplied, or create your own. The only limitation here is that it can only be one of the 4 main types mentioned above.

The first option in the menu is to play a game. This plays the current game and uses the cursor keys for movement. The zero key is used to fire. To change the current game to another of the eight, you choose option two.

Taking option 3 puts you in to the sprite editor

Sprites are 12 pixels square as opposed to the normal 8 available in Basic. These are the characters which will appear in your game including all the aliens, ships, missiles and the like. If you want animation, like a space invader which constantly blinks, you can define two different sprites and the program will constantly flick between the two during play..

The menu option which has the most dramatic effect on a game is the configuration section.

Selecting this option takes you to yet another menu which allows various characteristics of the game to be set.

Most important is the game format which is a number between 1 and 4 corresponding to the four types of game Adding 4 to any of these values makes the game joystick compatible. You can also set the background and foreground colours here.

There is also a special effects section which does wonderful things like

scattering random stars over the playing area. You can also specify whether aliens appear singly or in groups You can provide a shield for the laser base if you wish.

Next come the sound effects. Entering this option lets you alter the sounds by means of 4 sliding controls displayed on the screen.

There is a reasonable simulation of a definable envelope command here, and the sounds available are quite good.

There are 4 different options, with different noises producable for missile sound, bomb sound and explosions of ship and alien.

The attack wave command allows control of movement on the screen. Here you can set up your attack waves, and specify which sprites will be used to form them.

The actual movement is controlled by another menu option. There are a number of different movement paths which you can define and then link them to each other creating long chains

Whilst setting up the attack waves, you are also given control over such matters as how many points will be awarded for destroying certain aliens and also the maximum number of aliens in an attack wave

Once you heve created your masterpiece you can save it to cassette. The system used differs from The Quill in that the cassette is not a self contained game It is simply a data file which needs to be loaded along with the designer itself.

Although this package is sold as a games designer, there is a limit to the originality of the games which can be produced. You are always limited to variations on a theme, although it should be said that these variations can be quite divorced from the original.

However, you can produce smooth, fast machine code games with little effort — and you get 8 demo games as well. Games Designer comes from Quicksilva at £14.95 and runs on a 48k Spectrum.

If you've ever tried your hand at writing an Adventure program then you'll know just how long and complicated a job it can be

But that's been made a lot easier with The Quill, a program for the Spectrum which allows you to design your own adventure games. You can now put all your effort into creating the scenes and pitfalls, and leave The Quill to do the programming for you.

The best way to test such a program is to use it to create a simple Adventure, so that's what I did.

Firstly I designed the game by drawing a map showing all the locations and how they were connected.

There were just four locations in my example, although in reality you aren't limited to any size The program itself takes around 8k, so the database for the game can be massive if you have the time to design it

Once you have your map designed, you then have to tell the interpreter about the locations. You type in the text which is associated with that particular location.

The entire program is menu driven. There's a main menu with around 20 options such as alter vocabulary, select movement table etc , and you can alter any part of your game at will Within each of these choices there's a small sub-menu with 2 or 3 choices.

Once you have defined the locations

you have to tell the program how they are interconnected.

For each location, you need to specify all possible routes from it, and the number of the location which taking that route will lead you to.

No adventure is complete without a number of objects like keys, torches and jewels. You can have up to 255 objects in your Adventure and you define them in the same way as the locations. For each object number you type in the appropriate text.

Once you've specified your objects you can place them at their starting positions in the game Again you use the location numbers to specify positions.

There are also a few special object

Illustration Caron Creed

numbers for example 284, which implies that the object is currently being carried by the Adventurer.

The most important part of an Adventure is the range of words which the computer can understand. The program may not understand TURN ON THE LIGHT, but may be totally familiar with a command to LIGHT LAMP.

The heart of the Adventure is called the event table. It is this which links the actions which the program takes, to the commands which the player types in.

All the normal commands associated with Adventures are available, like Inventory, Describe and Quit. A player can also save the current game to tape and continue his quest at a later date.

This is distinct from saving the completed adventure to tape which can be done not by the player but by the person creating the game with The Quill.

Because certain actions are dependent on other conditions being satisfied, The Quill provides a number of flags which the program can set. For example, if a player picks up a key the program may set flag five to a value of one. Then, if the player tries to open the door the program will look at the value of flag five to see if the player has the key. If he or she does, then the door will be opened. If not, then the Adventure will say something like "you cannot open the door without the key".

Additional commands also exist such as BEEP, which enables you to add limited sound effects to the game. No doubt most people getting killed by a dragon will do so to the accompaniment of the Death March.

At any time you can test your Adventure and alter any part of it.

Using The Quill lets a computer user create a playable Adventure game. It will take quite some time to produce a good game, and a clear map is essential. Nevertheless, you do not need to know anything about programming. In fact, using The Quill will teach a novice something about writing programs as he works through the simple language which the Adventure interpreter understands.

This software is very professionally produced. It comes with a 32 page manual which takes you step by step through the creation of a simple Adventure.

Obviously if someone creates an Adventure he will wish to save it. You can do this with The Quill and it will save both the Adventure and a short Basic loader program. This means that the tape produced will auto-run and appear no different from a commercially produced program.

Gilsoft, creators of The Quill, are quite happy to let people sell their creations to others. They do not demand royalties as Softek do on their compiler. There is simply a message in the manual saying that "if you intend to sell an Adventure written with The Quill we would be grateful if you could mention somewhere in it that it was written with The Quill" Now that's the way to handle such matters, isn't it.

The Quill is made by Gilsoft which is based in Barry, South Glamorgan. You can buy a copy from selected computer outlets or direct from Gilsoft by mail or phone 0446 736369. If you're an adventure fan then you'll find it worth every penny of the £14.95 price tag.

Melbourne House have a similar program on offer for Spectrum owners.

It's called the high resolution user friendly real time games designer, or HURG for short!

Unfortunately there's only one copy of the program in the world at the moment, and that's in Australia. However, *Computer and Video Games* has discovered information about the program and it sounds very similar to the Quicksilva offering.

Again it is driven by a series of question and answer routines. It has the facility for creating various graphics characters and these can be animated. You can also speed up the game or make the aliens more vicious.

Any game can be saved on cassette, but you will still need the games designer loaded as the control program.

The Hurg comes with three demo games as opposed to Quicksilva's eight. There is also a monthly competition which Melbourne House will be running for the next few months to find the best game created with the Hurg. All the finalists will then be judged to produce a grand winner, with a prize of £1,000.

The Hurg should be available from you local W H. Smith soon, and it also costs £14.95.

With the introduction of these programs, it now seems possible that games written with such systems will be offered for sale on cassette. As for the quality of this software we shall have to wait and see. As for the question of copyright, I think that an interesting situation could develop.

Games for the BBC B and Sinclair ZX Spectrum

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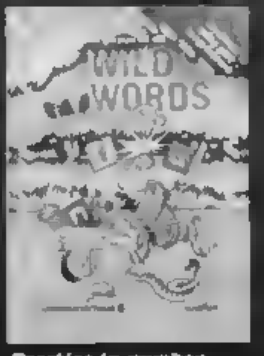

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EXCLUSIVE ADAMS!

Within the fun packed pages of our Book of Adventure we've got an exclusive interview with Scott Adams — the man who has baffled more Adventurers than he's had hot dinners. There will be lots of reviews, news and features on all aspects of Adventure gaming, plus a look at Adventure on video-games systems — and it's all put together by C&VG's ace Adventurer Keith Campbell.

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COLECO CONTEST

Last issue we promised you some ADAM family computer systems. Coleco are at this very moment rushing the Adams across the Atlantic — but in the meantime we've managed to get hold of three ColecoVision video-games systems plus Turbo Drive add ons as prizes in our Name the Game contest.

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Turn the page and see the unbeatable.

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The unbeatable TI Home Computer. It's all the computers your family will ever need.

Buying a home computer is something you have to get right first time. It's too late when you've got one to find it won't take plug-in software. Or can't be programmed without an expensive accessory.

The TI Home Computer is a real computer system

The TI Home Computer has got the memory power you might expect from more expensive computers, built in. At its heart is a powerful TMS 9900 16-BIT Microprocessor. Most other home computers have only an 8-BIT. And you can expand the memory from 16K of RAM up to 52K.

The total memory capacity is 114K Bytes.

A wide range of software for everyone

Another feature that makes the TI system so powerful, yet so easy to use is Solid State Software.™ These plug-in cartridges cover everything from space games like Parsec™ to teaching maths, managing home finances and composing music. And the range is getting wider all the time.

It even has what professionals look for in a home computer

CPU: TMS 9900 16-BIT, plus 256-byte Scratchpad RAM.
Memory: Total 114K bytes; 26K bytes ROM internal; up to 36K ROM cartridges external, 16K built-in RAM expandable to 52K bytes.
Keyboard: 48 Key QWERTY, alpha lock, function key auto repeat.
Sound: 5 octaves, 3 simultaneous tones, noise tone.
Colour: 16 foreground and background. High resolution.
Interfaces: Cassette, TV, 2 joysticks, main peripheral port.

™ trademark of Texas Instruments

More than one programming language

The standard programming language, TI BASIC, is built into your TI Home Computer so you can begin programming right away. But there's an expanded range of optional languages like Extended BASIC, TI Logo, USCD-Pascal, TI FORTH and Assembler.

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A wide range of peripherals

Most computers lose a lot of memory when you add peripherals. The TI Home Computer is different. Every peripheral comes with its own built-in programs to keep the loss of memory to a minimum.

The convenient Peripheral Expansion System houses up to eight peripherals. Additional hardware cards simply plug in. You can even add a complete Floppy Disk Memory System.

The peripherals include memory expansion, RS232 Interface, P-Code card and more. There's also a sophisticated matrix printer and Solid State Speech™ synthesizer – which you can use with your own TI BASIC programs.

A lot more for no more

The TI Home Computer gives you so much more without costing more. At today's price it's exceptional value. Take your family round to try one. If you never try it you'll never know what you're missing.

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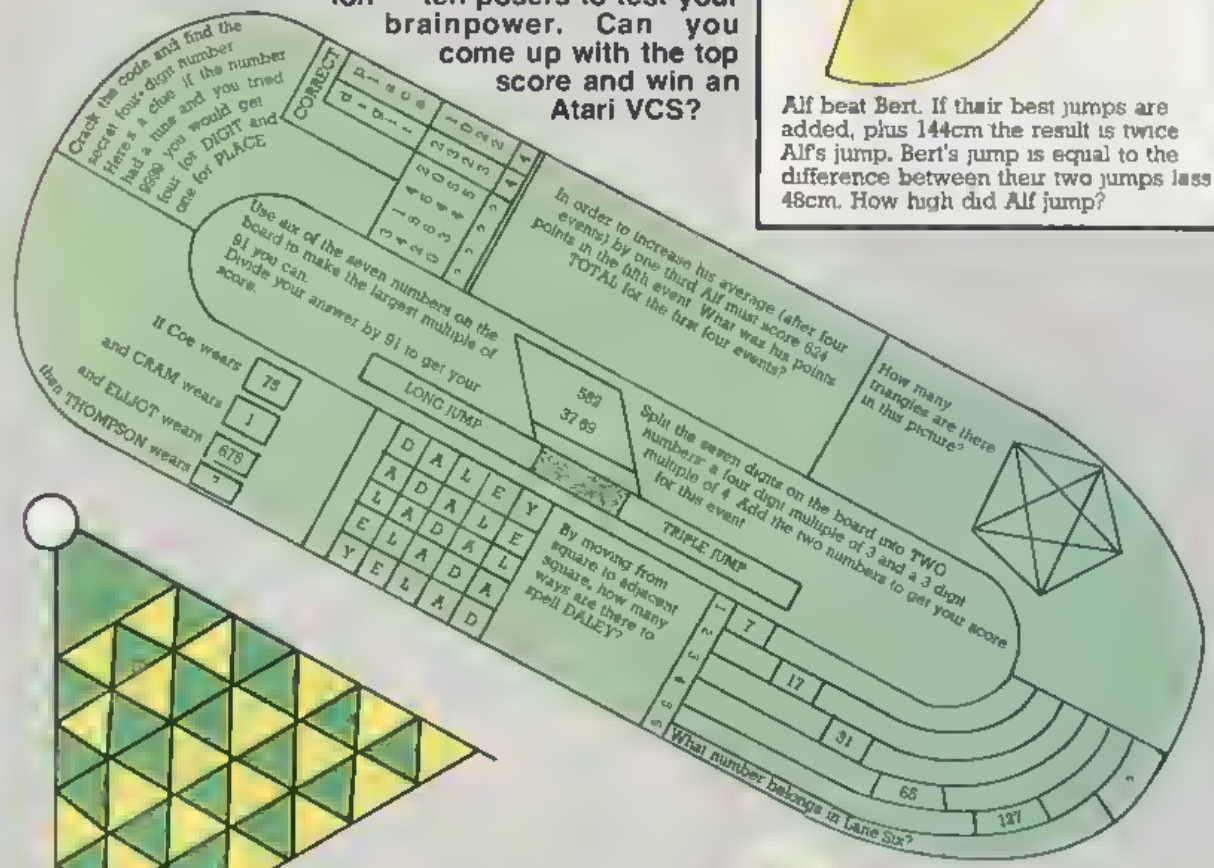
Creating useful products and services for you.

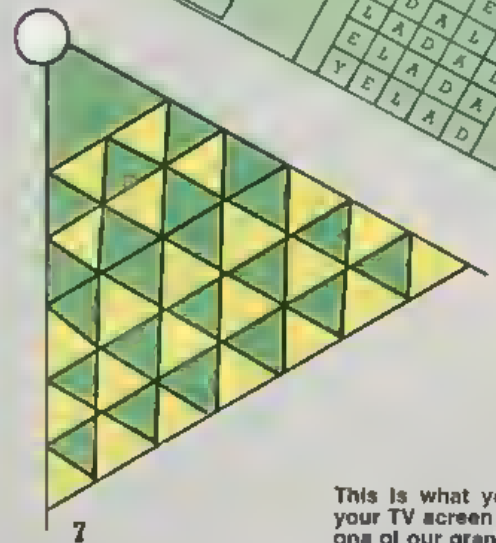
GET SET FOR THE DEVIOUS DECATHLON!

On your marks, get ready, GO! They are off and running in the *Computer and Video Games'* Devious Decathlon! Ten, yes ten Atari VCS video games systems are up for grabs in this test of your mental agility, plus copies of Activision's brand new Decathlon game. This features all the 10 challenges of the real-life Decathlon. So you can aim to be like Daley Thompson from tha comfort of your own armchair! Trevor Truran has come up with a puzzling equivalent to the Decathlon — ten posers to test your brainpower. Can you come up with the top score and win an Atari VCS?

8

Alf beat Bert. If thair best jumps are added, plus 144cm the result is twice Alf's jump. Bert's jump is equal to the difference between their two jumps less 48cm. How high did Alf jump?

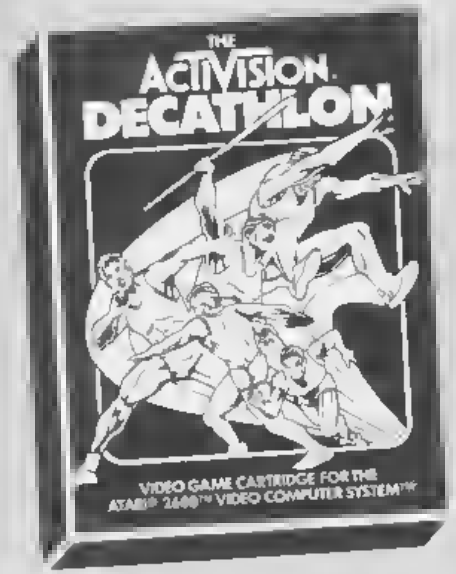




7

How many of the triangles of all sizes are more YELLOW than GREEN?

This is what you'll see on your TV screen if you win one of our grand prizes kindly donated by our friends at Activision, the Atari people who make many top selling games for the Atari VCS. This is just one screen in the game that takes you right through the Decathlon challenge.



THE RULES

You can win one of ten Atari VCS video games systems by solving our Devious Decathlon puzzle. We know it's a bit of a marathon — but we reckon it'll keep you thinking over the Christmas holidays.

To give you a bit longer to work out Trevor Truran's mind-twisting athletic action for intellectuals we're keeping the contest open until January 16th.

Thanks to our friends at Activision, who are supplying the Atari systems, we've also got 10 brand new Decathlon game cartridges to give away — so you'll have something to play with if you win one of these great prizes

All you have to do is work your way around the *C&VG* athletics track answering the questions as you go. The answer to each puzzle is a number which you enter as your score for that event in the coupon provided.

Your aim is to find the highest possible score for each round in the Decathlon — and therefore the highest final total.

You may, if you wish, take a guess at the answer, but beware! If your guess is higher than the maximum possible score for that puzzle then you'll get a zero score from the judges!

Send in your completed coupon to Decathlon Competition, *Computer and Video Games*, Durrant House, London, EC1R 5EJ. Normal *C&VG* contest rules apply and the editor's decision is final.

QUESTIONS AGAIN?

1. By moving from square to adjacent square, how many ways are there to spell DALEY?
2. What number belongs in Lane Six?
3. How many triangles are there in this picture?
4. In order to increase his average (after four events) by one third Alf must score 624 points in the fifth event What was his points TOTAL for the first four events?
5. Crack the code and find the secret four digit number. Here's a clue if the number had a nine and you tried 9999 you would get four for DIGIT and one for PLACE.
6. If Coe wears 75 and CRAM wears 1 and ELLIOT wears 675 then THOMPSON wears?
7. How many of the triangles of all sizes are more YELLOW than GREEN?
8. Alf beat Bert If their best jumps are added, plus 144cm the result is twice ALF's jump Bert's jump is equal to the difference between their two jumps less 48cm. How high did Alf jump?
9. Use six of the seven numbers on the board to make the largest multiple of 91 you can. Divide your answer by 91 to get your score (long jump).
10. Split the seven digits on the board into TWO numbers a four digit multiple of 3 and a 3 digit multiple of 4 Add the two numbers to get your score for this event (triple jump).

WAR GAMERS

Fantasy film fans soon got to grips with our War Games competition and postcards came flooding in thick and fast! We've waded through the pile of mail to pick six winners who will be receiving the Thorn-EMI games cartridge based on the movie.

ATARI 400

Stephen McKone, 254 Grimsby Road, Cleethorpes, South Humberside, DN35 7ET.

Tim J. Hale, 70 Mayton Street, LONDON N7.

VIC-20

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Gregory Brown, 34 Meynell Drive, Leigh, Lancs, WN7 3JR.

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John Platt, 15 Brynnewydd East, Prestatyn, Clwyd, LL19 9ES.

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Name

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ROUND

SCORES

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TOTAL

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ABOUT OUR INTERFACE

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The hardware programmable interface requires no additional software and accurately replicates the keys of the computer in a manner which is responsive to absolutely *ALL* key reading methods, both BASIC and Machine Code.

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There is no need to remove the interface once fitted as the rear extension connector will accommodate further expansion, i.e. printers or RAM packs etc. This important feature avoids excessive wear to the expansion port.

The key replication principle pioneered by AGF means that your own programs can use eight directional joystick movement by utilising simple key reading BASIC.

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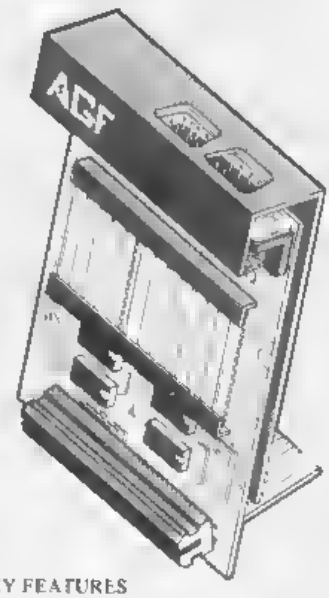
The interface is programmed by a two digit code, which is looked up on a programming chart supplied for each direction and firing button. The two numbers are then selected on a pair of knobs which are clipped onto appropriately numbered strips on the interface.

Once configured this can be marked on a Quick Reference Programming Card for storing with the game. As the programming is *not* power dependent the interface retains the last configuration made and can be immediately used when next switched on.



KEY FEATURES

- Programmable design gives TOTAL software support.
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- Rear extension connector for all other add-ons.
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PACKAGE CONTENTS SUPPLIED

- Programmable Interface Module as illustrated, complete with clip-on programming leads.
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- One pack of ten Quick Reference Programming Cards for at-a-glance setting to your games requirements. The card allows you to mark the configuration in an easy to read fashion with space to record the software title and company name.
- Video Graffiti demonstration program which is written totally in BASIC to illustrate how all eight directions and fire can be read. This is also a useful high resolution drawing program.
- 12 months guarantee and full written instructions.

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ONE	VIDEO GRAFFITI	FREE	
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EXPECT THE UNEXPECTED WITH THE TERRAHAWKS!

"Ha, ha, he, ha, ha! So, these are the puny humans who think they can stop Zelda, queen of evil and ruler of the spaceweys. They mey have all the sophisticeted equipment their insignificant earth science can provide but it's still no match for my mighty powers! They may be eble to thwart my invasion plans from time to time — but there is no doubt about the final outcome. Zelde will be victorious!"

As nesty old Zelda hes just informed you this is the Terrahawks team, pledged to defend the Earth from elien attacks. Each week on your TV screens the Terrahawks go into action — fighting off increasingly cunning attacks thought up by the evil Zelde.

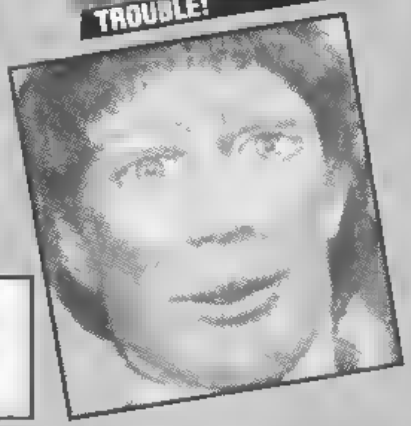
We've got a couple of Philips G7000 video games systems to give away in our great Christmas Terrahawks contest — complete with the brand new gemes cartridge based on the TV series. All you heve to do is watch the show, created by Thunderbirds man Garry Anderson, and then enswer our Terrehawks questions. Do it before Zelda gets to you!

1 THIS PICTURE SHOWS ANOTHER STAR OF THE TERRAHAWKS SERIES SERJEANT-MAJOR ZERO — THE LOVABLE LEADER OF THE ZEROIDS WHAT PARTICULAR POWER DOES HE HAVE WHICH HELPS GET THE TERRAHAWKS OUT OF TIGHT CORNERS?

2 CAN YOU NAME THE TERRAHAWKS TEAM PICTURED ABOVE?

3 WHO, OR WHAT, IS HUDSON?

4 THE CHIEF OF THE TERRAHAWKS IS A MAN OF MYSTERY. WHAT IS HIS SECRET? HERE'S A CLUE. HE OFTEN FINDS HIMSELF IN DOUBLE TROUBLE!



Send your answers on postcards only please, to Terrahawks, *Computer and Video Games*, Durrant House, Herbal Hill, London EC1R 5EJ. The closing date is December 16th, and normal *C&VG* competition rules apply. The editor's decision is final.

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We are the computer and video gamesspecialists in Birmingham, Manchester, Nottingham and Sheffield. The place to see the game of your choice demonstrated on request. The place where you can here about the latest developments in computer and video games. Visit Games Workshop today, we are the people who know about the games you want to play.

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NW10 6JP. Tel: 01-965 3713. Monday-Friday 9.30-5.30

HUNT THE RACING ENDURO CHAMPION

James Hunt was the last British racing driver to hold the coveted Formule One World Championship title — and we had hundreds of postcards telling us so after we launched out Activision Enduro competition a couple of issues ago. We delved into the sack of mail to pick out ten lucky winners who will all receive an Enduro cartridge for their Atari VCS. The winners are; Darren Hearn from Bristol; Michael Shipley who lives in Bucks; Sinead Corkery from Berkshire; Cad Delworth from Edinburgh; Michael Tomordy of Herttordshire; Andrew Lloyd from Gloucester; Peter Clarke from Oxfordshire; Mr G. Devis from Wolverhampton; Paul Mogford from Gwent and N. Armstrong from Cheshire. Congratulations to all of you!

GET YOUR FREE GAMES HERE!

We've still got 20 FREE Imagine games tapes for the Vic-20. The first 20 postcards picked out of the sack will each receive a copy of Imagine's new Bewitched game. Don't delay, send your postcard in to Bewitched, Computer and Video Games, Durrant House, 8 Herbal Hill, London, EC1R 5EJ. Don't forget to include your name and address on your postcards!

Meanwhile Atari owners living in [illegible] and Southampton can claim 100 FREE copies of Imagine's Laggit game. This XL and we'll be giving games tapes away to the first 100 people who send in the coupon below. Your entry must be postmarked from either one of the other of these two famous seaports to qualify. Cut out and send in the coupon marked Laggit, Computer & Video Games, Durrant House, 8

Name

Address

HERE'S YOUR CUE TO HELP FREDDY POT THE BLACK!

The game hange in the balence. Everything depende on this tinel shot. It Freddy Frinkle, the men with the Golden Cue, miasee this shot he will hend the tille to the young pretender Simon Smooth.

The pressure begime to tell. The normally emooth green belze teble suddenly starts to swim in front of his eyee end le transformed into a mind-boggling maze. He wipes his fevered brow end blinks his eyee — but the strenge maze remeine.

Whet can he do? Can you help Freddy clinch the chemplonship? Simply find e path through the meze to the bleck — end pot it!

We've got 25 copies of the latest snooker game from new software house Visiona — autographed by snooker champ and video games fan Steve Davis — up for grabs in our Pot the Bleck contest

Atl you heve to do is find your way lhrough lhe snooker maze created by artist Ross Collins, aolve tho snooker riddle we've posad, end quickly aend off the coupon with your maze solution, cut from the magezine, to the C&VG ellice The first 25 correct answers out ol *C&VG*'s memory bin will receive a prize.

Vialons' snooker program runs on live machines, the Spectrum, BBC ®, Vic-20, Commodore 64 end tho new Electron. There are liva games tapes on offer for each machine — so don't forgot lo tall us which particular vorsion you want it we pick you out of the bin. Sond your ontries to *Computer and Video Games*, Pot tho Bleck, Durrant House, 8 Herbal Hill, London EC1R 5EJ.

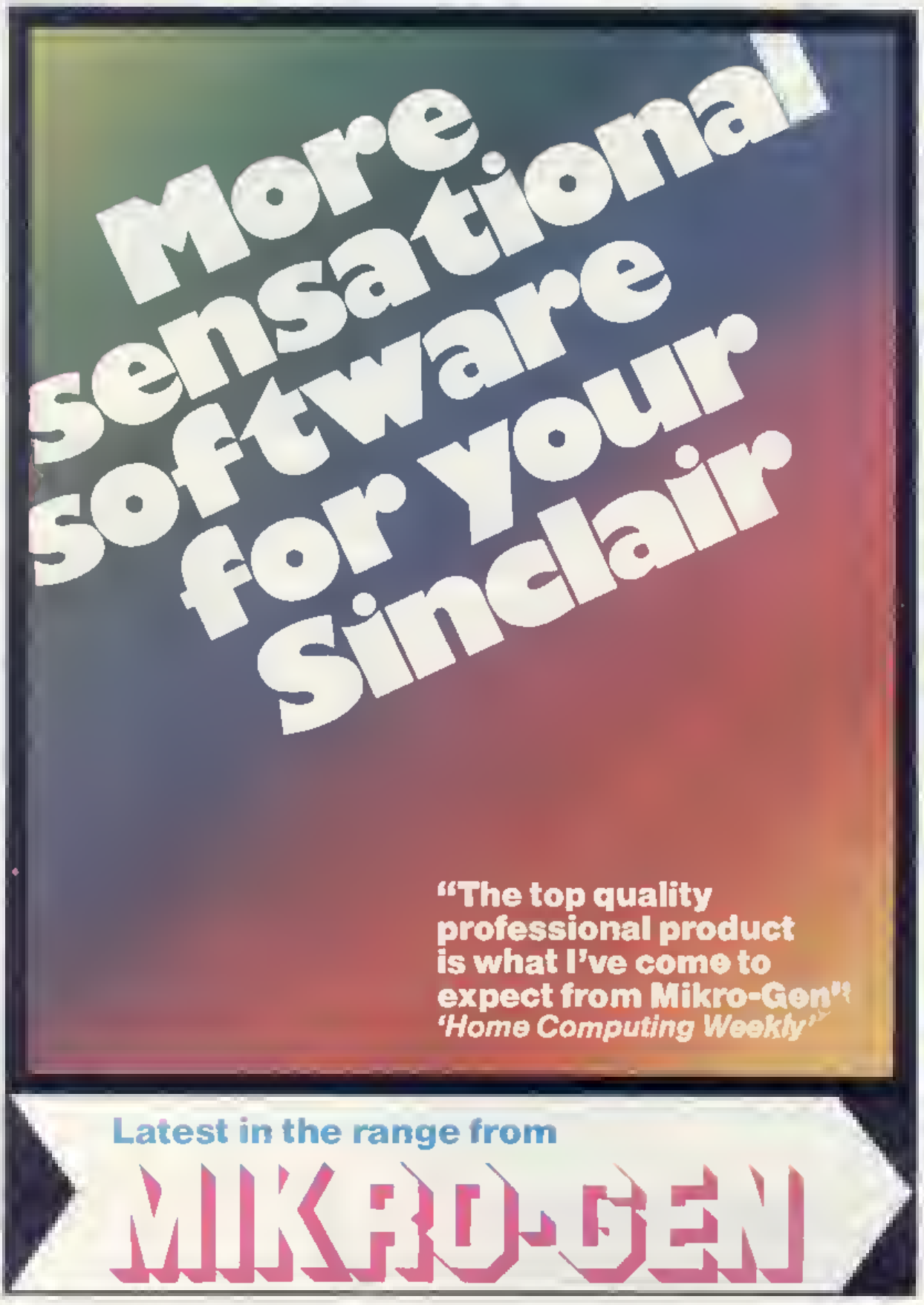
THE QUESTIDN: Could there over ba a "break" ol 162 in a game ol anookor? Gol your thinkmg caps on — aolve the meze end answer lhe question end a snooker corlridge could be yours!

The answer to the snookor posor la

Name

Address

Computer you own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Pat the Postman
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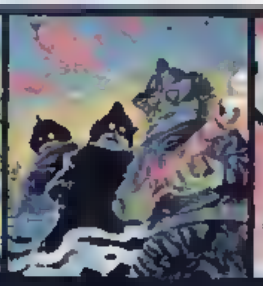

Defender
Earth is under attack from mutant aliens in an accurate implementation of a top arcade game – and one of the most difficult to survive in!
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Cruise Attack
Save the city from annihilation in this wonderful version of an arcade favourite. Nine skill levels, bonus points for attack ships.
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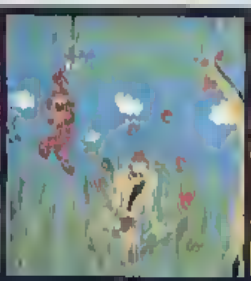

Nanas
Catch the bananas, miss the coconuts. Easy? Try it and see. Simple in concept, hilariously entertaining – it'll drive you bananas.
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Timequest
A warp-space accident spreads your capsule across time. As you land in each new era, fresh perils face you. A very skillful graphic adventure
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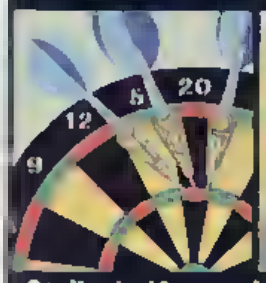

One Hundred & Eighty
That famous shout tells you what it's all about! A good implementation of a difficult game – doubles, trebles, twenty-five and bull all possible.
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Land of Sagan
A quest to find the long lost Staff of Health. Is it in one of the castles? Or in the Tower? There are plenty of problems – and plenty of opponents – in this great graphic adventure.
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Creepy Crawler
An authentic version of one of the most addictive arcade games devised. All the usual features (Centipede, Spider, Bug, etc) with full use of Spectrum graphics and sound.
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Mad Martha II
Great sequel to the best-selling Mad Martha. Hilarious graphic adventure, with hero Harry in sunny Spain, beset by wacky waiters, mad bulls and the wrathful Martha.
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SAS Assault
Your mission – rescue the Russian ambassador from terrorist kidnappers, before the Kremlin declares war. Leads in two parts – your rating in the second depends on your skill in the first.
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Star Trek
Defend the star systems against the Klingon attack. Runs in real time – so you have to make the right decisions fast!
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Drakmaze
Find your way round Dracula's domain. A game to get your teeth into!
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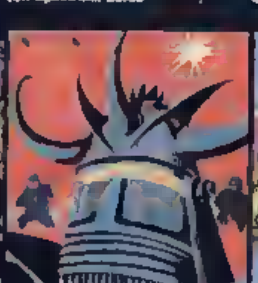

Laserwarp
Invaders, Aliens, this game has the lot – and you have to survive to destroy the Master! Simple controls, far from simple task.
48K Spectrum, £6.90

Knockout
No aliens, lasers, invaders or rockets – just simple but absorbing fun which up to 4 players can enjoy.
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Galakzions
Watch out as the Galakzions break formation to attack in such force that no mere human can survive!
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LAST CHANCE TO WIN A CHEQUE-MATE!

Illustration by Debbie Crook

Here's your second — and final — chance to enter our amazing Chess competition. All you have to do is read the rules below and then start planning your next move. Very soon a wonderful *Ambassador* Chess computer could be yours!

If you missed our last issue — how could you! — you won't know that the *Ambassador* is a powerful, expandable Chess computer.

It doesn't look much like a computer, more like a regular Chess board. That makes it extremely easy to use — the Chess pieces are moved in the conventional way on the board.

You don't have to bother about a keyboard to type in moves or squint at a screen to see what's going on. The board registers each move using its automatic sensory capabilities.

The *Ambassador* has 10 skill levels to cope with beginner and expert alike, and also has two analysis levels — useful for solving chess problems or playing correspondence Chess. All this can be yours. Read on!

"Curious, isn't it," said Alice. "What is?" barked the Red Queen irritably. "These computer things," replied Alice, "It seems that these days young people don't go adventuring through the Looking Glass like I did, but use these micro-computers instead." "Rubbish!" shouted the Red Queen, you know micro-computers don't really exist. They are just a figment of the White Knight's imagination!"

"It must be interesting to go through a computer screen," Alice continued unruffled by the Red Queen's outburst. "I wonder what Computerland looks like?" she added with a wistful look in her eye. "Be quiet girl!" the Red Queen was obviously getting annoyed. "Eat your dry biscuit!" Alice stood up and strode away from the blustering Queen. "Where are you going!" the Red Queen shouted after her. "To find the White Knight," Alice said forcefully, "I want to find out all about these micro-computer things!"

While Alice is off discovering the magical world of micro's we've got a little task for you too. And you could win a Chess computer!

Can you dream up an adventure game based on the theme of the Chess board — just like Lewis Carroll did in his second Alice adventure *Through the Looking Glass*?

What we'd like you to do is to look at your Chess board and imagine that it has been transformed into a magical land.

Dream up some characters to inhabit your Chess-board world, and a hero to move through it. Perhaps he's searching for a lost treasure or an imprisoned princess — or on a quest to destroy all evil on the board world. Use the standard moves for chess pieces as a basis for moving your characters about in Chess-world — or dream up some new moves of your own! All that we require is that you use the chequered board as the basis for your imagination to work on.

We'd like you to attempt to write a listing for your Adventure if you can — but it's not essential. If you like you can simply give us an idea, backed up with diagrams and documentation of how your game would work on a micro. And if you don't feel like writing an Adventure why not have a go at creating a graphic video-style game based on a Chess theme?

The winner will receive an *Ambassador* Chess Computer from Contamporary Chess Computers, details of this amazing prize can be found elsewhere on this page. Runners-up will get Chess software for their computers. So don't forget to let us know what micro you own. The coupon below should accompany your entry.

As this is quite a complicated task we're giving you three months to come up with a great idea and send it to us. So you've got until January 16th 1984 to get your idea to us. Address your entries to Chess Competition, *Computer and Video Games*, Durrant House, 8 Herbal Hill, London EC1R 5EJ. The usual competition rules apply and the editor's decision is, as always, final!

Please enter my game in the C&VG/Contemporary Chess Computers Competition

Name

Address

Telephone number

Name of Game

Type of Game/video-style or Adventure

Computer your game runs on/computer you own

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takes place in early 1984. The total will have risen to 400 pages. From then on, each copy of the Directory will be updated quarterly so that, at all times, in your store, consumers will be able to find all the information they need about personal computer software. There simply isn't a better or more effective way of showing the consumer what each program offers.

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The Websters Software Directory is at the centre of a comprehensive personal computer software service. Our current stock list contains all the best selling titles from all the leading software houses. Programs are available for use on Sinclair, Commodore, BBC, Dragon, Texas Instruments, Atari, Acorn, Oric, Tynx and Mattel microcomputers.

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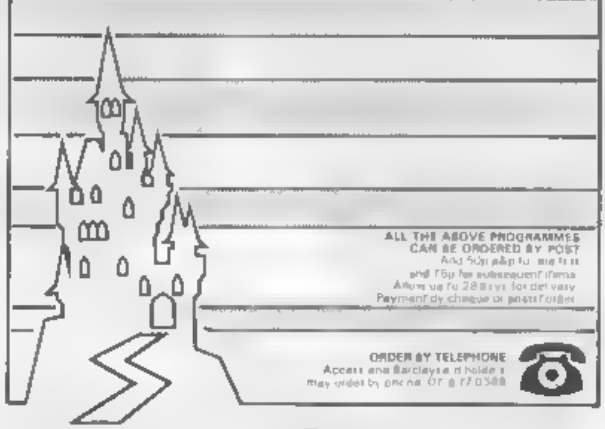

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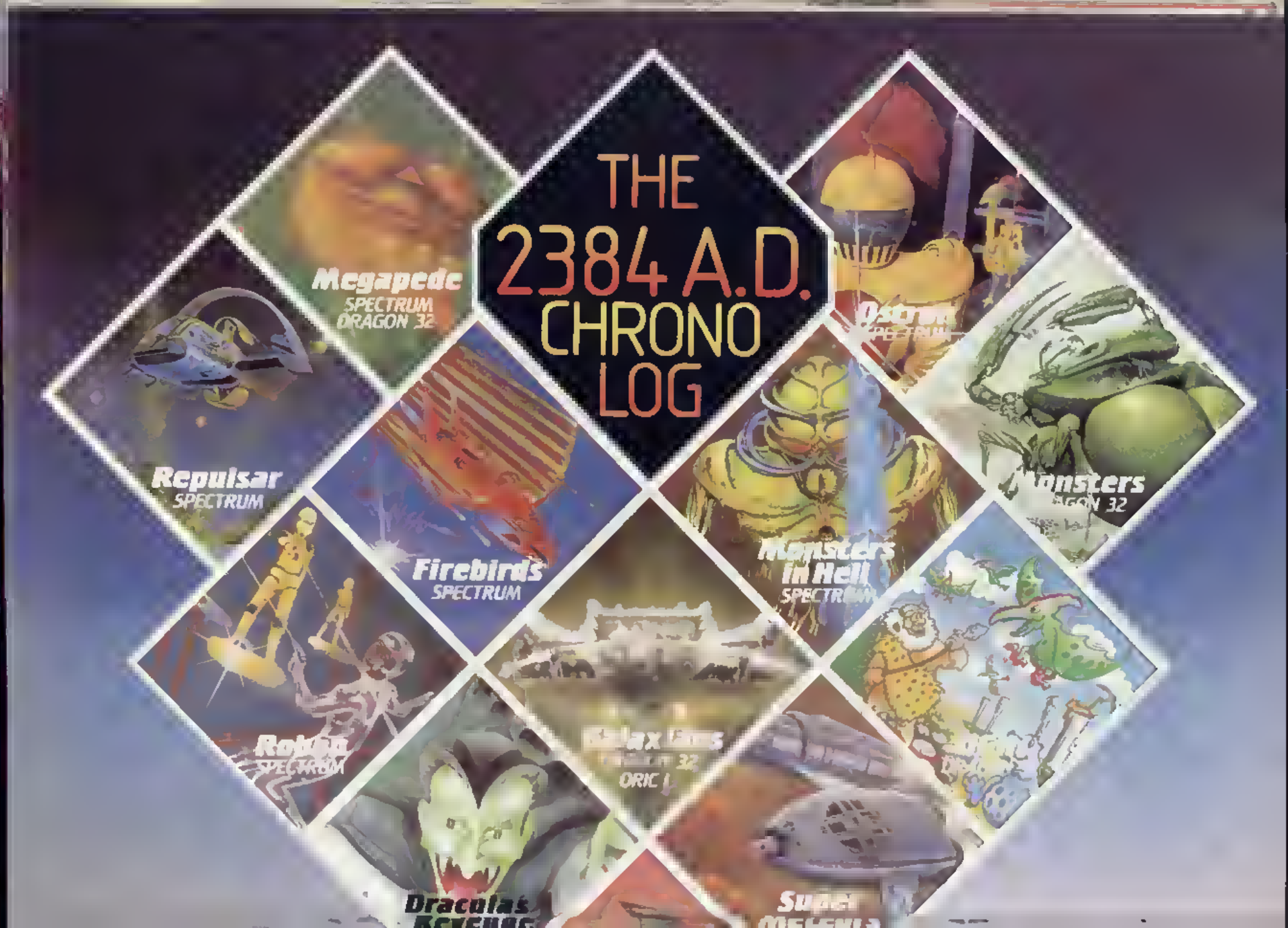
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TANK

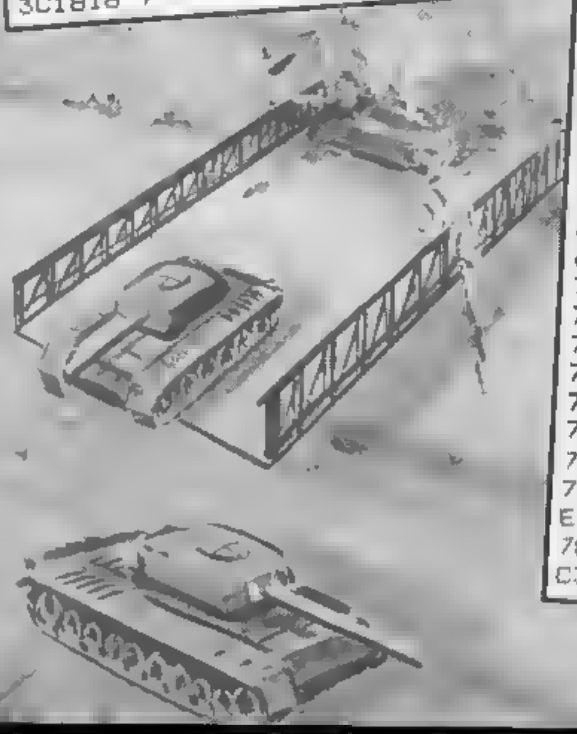
RUNS ON A TEXAS TI 99/4A IN 8.5K

BY ANDREW LEES

Enemy Panzer divisions are advancing — and only you can halt them! You are a tank commander in control of a small group of defenders — protecting the last standing bridge across the river. Your troops have managed to destroy all other bridges — but could not reach this one in time. So your only hope is to blast the enemy tanks as they race across the bridge. You have positioned your tank on a vantage point overlooking the bridge and can blast the enemy at will. But beware — they'll be shooting back. You must adjust the angle of your gun before each shot to score direct hits on the enemy as they cross the bridge using different lanes. You have three lives to play with before the enemy overruns your territory. Can you hold back the armoured tide?

Veriebles
Life = lives left.
Shot = number of shells per tank
Score = points scored.
V = horizontal position of tank gun
G = length of gun.
F = position where your tank is firing from.
T = where shot will land
Le = length of shot.
Vert = vertical position of enemy tank
Hor = horizontal positon of enemy tank

```
30 FOR COL=2 TO 12
40 CALL COLOR(COL,COL+1,COL+
1)
50 NEXT COL
60 CALL SCREEN(2)
70 CALL CLEAR
80 PRINT "((00  888  h
H   AA   A"
90 PRINT "PPXX h   h pp
X   pp  p"
100 PRINT " xx  1   1 1 1
 0   (( ("
110 PRINT " 00  8   8 8  A
 p   AA' "
120 PRINT " HH  P   P H   H
 p   X1( "
130 PRINT " ``  hYFMh A     A
 0   88 8 "
140 PRINT " xx  1   1 0
00   ((  ("
150 PRINT " 00  8   8 H
 H   AA   A"
160 PRINT ::::::::
170 FOR I=1 TO 500
180 NEXT I
190 CALL CLEAR
200 CALL SCREEN(16)
210 FOR I=1 TO 12
220 CALL COLOR(I,2,1)
230 NEXT I
240 PRINT "WANT INSTRUCTIONS
(Y/N)?"
250 CALL KEY(0,K,S)
260 IF K<1 THEN 250
270 IF K=78 THEN 290 ELSE 24
20
280 GOTO 250
290 LIFE=3
300 CALL CHAR(54,"FFFF7E7E3C
3C1818")
```



```
310 CALL CHAR(55,"3C3C3C3C3C
3C3C18")
320 DIM P(21)
330 CALL COLOR(9,9,1)
340 DIM R(24)
350 SHOT=1
360 CALL COLOR(8,5,1)
370 CALL COLOR(1,4,4)
380 CALL SCREEN(8)
390 SCORE=0
400 CALL COLOR(13,7,15)
410 CALL COLOR(15,3,15)
420 CALL COLOR(16,3,15)
430 CALL COLOR(12,15,15)
440 CALL CHAR(120,"FFFFFFFFF
FFFFFFFFFFF")
450 CALL COLOR(11,13,15)
460 CALL COLOR(2,2,15)
470 Y=5
480 G=1
490 RANDOMIZE
500 CALL CHAR(113,"000000FF0
000000F")
510 CALL CHAR(112,"3C7EFFFFF
FFF7FFF")
520 CALL CHAR(145,"0000E0F0F
0E080FF")
530 CALL CHAR(146,"FF7F3F1F0
F070301")
540 CALL CHAR(152,"FFFFFFFFA
A55AAFF")
550 CALL CHAR(153,"FEFFFFFFF
EFCF8F0")
560 CALL CHAR(154,"000080")
570 CALL CHAR(101,"18183C3C7
E7EFFFF")
580 CALL CHAR(91,"183C3C3C3C
3C3C3C")
590 CALL CLEAR
600 CALL CHAR(135,"FFFFFFFFF
FFFFFFF")
610 REM  BRIDGE
620 CALL HCHAR(11,1,135,32)
630 CALL VCHAR(12,8,135,4)
640 CALL VCHAR(12,16,135,4)
650 CALL VCHAR(12,24,135,4)
660 CALL VCHAR(12,32,135,4)
670 CALL HCHAR(8,1,45,32)
680 CALL HCHAR(7,1,120,32)
690 CALL HCHAR(6,1,120,32)
700 CALL HCHAR(4,1,120,32)
710 CALL HCHAR(3,1,120,32)
720 CALL HCHAR(9,1,120,32)
730 CALL HCHAR(10,1,120,32)
740 CALL HCHAR(5,1,45,32)
750 CALL HCHAR(2,1,45,32)
760 CALL HCHAR(1,1,135,32)
770 CALL CHAR(137,"7E7E7E7E7
E7E7E7E")
780 CALL CHAR(136,"3C3C3C3C3
C3C3C3C")
```

Illustration: John Higgins

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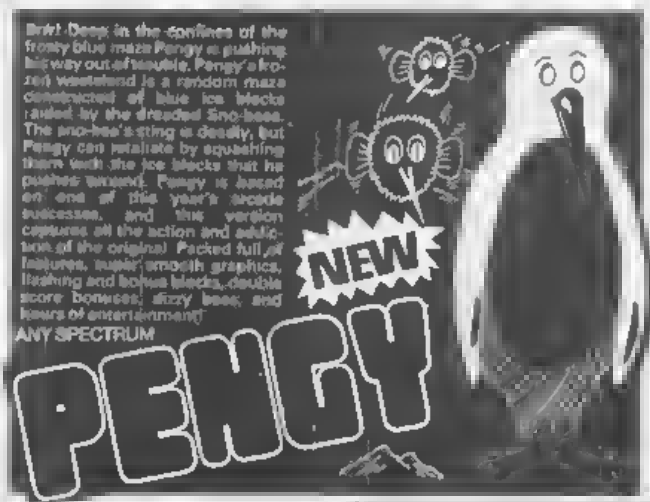

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```
790 CALL CHAR(138,"FFFFFFFFF
FFFFFFF")
800 CALL COLOR(14,13,4)
810 GOTO 1700
820 CALL KEY(0,M,S)
830 IF M=69 THEN 890
840 IF M=88 THEN 930
850 IF M=83 THEN 970
860 IF M=68 THEN 1010
870 IF M=32 THEN 1060
880 GOTO 1810
890 G=G+1
900 IF G>3 THEN 910 ELSE 920
910 G=3
920 GOTO 1360
930 G=G-1
940 IF G<1 THEN 950 ELSE 960
950 G=1
960 GOTO 1360
970 Y=Y-1
980 IF Y<3 THEN 990 ELSE 137
0
990 Y=3
1000 GOTO 1360
1010 Y=Y+1
1020 IF Y>27 THEN 1030 ELSE
1360
1030 Y=27
1040 GOTO 1360
1050 REM  USERS SHOOTING SEQ
UENCE
1060 IF SHOT=0 THEN 1360
1070 CALL GCHAR(T,Y+2,XX)
1080 FOR I=F TO T STEP -1
1090 CALL GCHAR(I+1,Y+2,R(I)
)
1100 NEXT I
1110 CALL VCHAR(T,Y+2,101,LE
)
1120 CALL VCHAR(T,Y+2,91)
1130 FOR J=F TO T STEP -1
1140 CALL VCHAR(J+1,Y+2,R(J)
)
1150 NEXT J
1160 CALL SOUND(1,1760,0)
1170 SHOT=SHOT-1
1180 IF XX=112 THEN 1200 ELS
E 1330
1190 CALL HCHAR(I+1,Y+2,120)
1200 SCORE=SCORE+20
1210 A$="SCORE="&STR$(SCORE)
1220 CALL COLOR(3,2,1)
1230 FOR I=1 TO LEN(A$)
1240 CALL HCHAR(1,I+2,ASC(SE
G$(A$,I,1)))
1250 NEXT I
1260 FOR I=1 TO 16
1270 CALL SCREEN(I)
1280 CALL SOUND(I,110*I,I)
1290 NEXT I
1300 CALL SCREEN(8)
1310 GOTO 1950
```

```
1320 XX=0
1330 CALL SOUND(200,-5,0)
1340 CALL HCHAR(I+1,Y+2,120)
1350 I=0
1360 CALL VCHAR(16,Y+2,32,8)
1370 CALL VCHAR(21,Y,138,4)
1380 CALL VCHAR(21,Y-1,32,4)
1390 CALL VCHAR(21,Y+4,138,4
)
1400 CALL VCHAR(21,Y+5,32,4)
1410 CALL VCHAR(16,Y+1,32,9)
1420 CALL VCHAR(16,Y+3,32,9)
1430 REM  USERS MOVING SEQUE
NCE & RAISING GUN SEQUENCE
1440 ON G GOTO 1450,1530,161
0
1450 CALL HCHAR(24,Y+2,138)
1460 F=20
1470 T=9
1480 LE=11
1490 CALL HCHAR(23,Y+2,137)
1500 CALL HCHAR(22,Y+2,136)
1510 IF Y+1=HOR THEN 2070
1520 GOTO 1810
1530 CALL VCHAR(23,Y+2,138,2
)
1540 F=17
1550 T=6
1560 LE=11
1570 CALL VCHAR(21,Y+2,137,2
)
1580 CALL VCHAR(19,Y+2,136,2
)
1590 IF Y+1=HOR THEN 2070
1600 GOTO 1810
1610 CALL VCHAR(22,Y+2,138,3
)
1620 LE=11
1630 T=3
1640 F=13
1650 CALL VCHAR(19,Y+2,137,3
)
1660 CALL VCHAR(16,Y+2,136,3
)
1670 IF Y+1=HOR THEN 2070
1680 GOTO 1810
1690 REM  ENEMY LANE SELECTI
NG
1700 K=INT(RND*3)+1
1710 IF K=1 THEN 1740
1720 IF K=2 THEN 1760
1730 IF K=3 THEN 1780
1740 VERT=9
1750 GOTO 1790
1760 VERT=6
1770 GOTO 1790
1780 VERT=3
1790 HOR=29
1800 REM  ENEMY MOVING ROUTI
NE
1810 HOR=HOR-1
1820 IF HOR=2 THEN 1950 ELSE
 1840
```

```
1830 GOTO 1950
1840 CALL HCHAR(VERT,HOR-1,1
13)
1850 CALL HCHAR(VERT,HOR,112
)
1860 CALL HCHAR(VERT,HOR+1,1
45)
1870 CALL HCHAR(VERT,HOR+2,1
20)
1880 CALL HCHAR(VERT+1,HOR-1
,146)
1890 CALL HCHAR(VERT+1,HOR,1
52)
1900 CALL HCHAR(VERT+1,HOR+1
,153)
1910 CALL HCHAR(VERT+1,HOR+2
,154)
1920 CALL HCHAR(VERT+1,HOR+3
,120)
1930 IF Y+1=HOR THEN 2070
1940 GOTO 820
1950 CALL HCHAR(VERT,HOR+1,1
20)
1960 CALL HCHAR(VERT,HOR+2,1
20)
1970 CALL HCHAR(VERT,HOR,120
)
1980 CALL HCHAR(VERT,HOR-1,1
20)
1990 CALL HCHAR(VERT+1,HOR+1
,120)
2000 CALL HCHAR(VERT+1,HOR+2
,120)
2010 CALL HCHAR(VERT+1,HOR+3
,120)
2020 CALL HCHAR(VERT+1,HOR,1
20)
2030 CALL HCHAR(VERT+1,HOR-1
,120)
2040 SHOT=1
2050 GOTO 1700
2060 REM  ENEMY SHOOTING ROU
TINE
2070 CALL HCHAR(VERT,HOR-1,1
20)
2080 CALL CHAR(114,"3C7EFFCF
CFFF7FFF")
2090 CALL HCHAR(VERT,Y+1,114
)
2100 CALL HCHAR(VERT,Y+2,120
)
2110 LE=0
2120 FOR I=VERT+2 TO 21
2130 LE=LE+1
2140 CALL GCHAR(I,Y+2,P(I))
2150 NEXT I
2160 CALL GCHAR(Y+2,21,B)
2170 CALL COLOR(3,10,1)
2180 CALL VCHAR(VERT+2,Y+2,5
4,LE)
2190 CALL HCHAR(21,Y+2,55)
2200 FOR I=VERT+2 TO 21
```

```
2210 CALL HCHAR(I,HOR+1,P(I)
)
2220 NEXT I
2230 CALL COLOR(3,2,1)
2240 LE=0
2250 LIFE=LIFE-1
2260 FOR I=1 TO 10
2270 CALL SOUND(10*I,110*I,I
)
2280 NEXT I
2290 IF LIFE<1 THEN 2310
2300 GOTO 1810
2310 CALL CLEAR
2320 FOR I=1 TO 8
2330 CALL COLOR(I,2,1)
2340 NEXT I
2350 PRINT "FINALLY YOU WERE
 SHOT BY AN  ENEMY TANK YOU
SCORED";"";SCORE
2360 PRINT "WANT ANOTHER GAM
E(Y/N)?"
2370 CALL KEY(0,K,S)
2380 IF K=89 THEN 290
2390 IF K=78 THEN 2410
2400 GOTO 2370
2410 END
2420 CALL CLEAR
2430 PRINT
2440 PRINT "PROG BY ANDREW L
EES AGE 13"
2450 PRINT
2460 PRINT "YOU ARE  CONTROL
LING A  TANK  THE AIM OF THE
 GAME IS TO SHOOT THE EN
EMY TANKS  AND STOP THEM FR
OM CROSSING THE BRIDGE"
2470 PRINT "PRESS THE SPACE
BAR TO FIRE"
2480 PRINT
2490 PRINT "S MOVES YOU LEFT
 & D RIGHT  E MAKES YOU YOUR
 GUN LONGER THEREFORE LE
NGTHENING YOUR  RANGE SO THA
T "
2500 PRINT "YOU CAN HIT THE
HIGHER LANES&X DOES THE OPPO
SITE"
2510 PRINT
2520 PRINT "YOU CAN ONLY FIR
E ONE SHELL PER TANK AND YOU
 HAVE TO HIT THE TURRET.
IF YUO MISS THE ENEMY WILL S
HOOT"
2530 PRINT "LUCKILY YOU HAVE
 THREE LIVES"
2540 PRINT
2550 PRINT "PRESS ANY KEY TO
 BEGIN"
2560 CALL KEY(0,K,B)
2570 IF K>0 THEN 290 ELSE 25
60
```

20
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```
10 REM Breakout © D.Ross 1983
11 RANDOMIZE
12 RESTORE
15 DEF FN a(x)=LEN (STR$ x)
16 DEF FN b(x)=(x/2=INT (x/2))
17 DEF FN c(x)=(x/2<>INT (x/2))
20 DIM h(5): DIM h$(5,10): FOR
a=1 TO 5: LET h$(a)="..........
": NEXT a: BORDER 5: PAPER 7: IN
K 0: FLASH 0: OVER 0: INVERSE 0:
CLS : REM initialise
25 LET last=0
30 GO SUB 9000: REM graphics
35 BORDER 5
40 LET sc=0: LET basa=5
50 CLS : PRINT AT 0,2;"Score 0
00 Last 000 Ball 0"
51 PRINT AT 1,0;"  ": FOR a=2 TO
17: PRINT AT a,31;" ": NEXT a:
PRINT AT 18,0;"  "
60 PRINT AT 0,20-FN a(last);la
st
70 OVER 1: PAPER 4: FOR a=0 TO
31: PRINT AT 0,a;" ";AT 1,a;" "
: NEXT a
80 FOR a=2 TO 10: PRINT AT a,3
1;" ": NEXT a: FOR a=31 TO 0 STE
P -1: PRINT AT 18,a;" ";AT 19,a;
" ";AT 20,a;" ";AT 21,a;" ": NEX
T a
90 PAPER 6: FOR a=2 TO 17 STEP
2: FOR b=0 TO 30: PRINT INK 6;A
T a,b;" ";AT a+1,b;" ": NEXT b:
NEXT a: REM fill play area
110 REM now draw bricks
119 LET ball=1
120 FOR a=20 TO 25: FOR b=2 TO
16 STEP 2: PAPER 5-(21-a): PRINT
AT b,a;"B";AT b+1,a;"C": NEXT b
: NEXT a
130 PAPER 0: INK 7: FOR a=20 TO
25: PRINT OVER 0;AT 18,a;a-19:
NEXT a
140 PAPER 4: INK 0: OVER 0: PRI
NT AT 0,27-FN a(ball);ball
141 PAPER 4: INK 0: PRINT AT 20
,5;"Press 'ENTER' to serve"
142 IF INKEY$<>CHR$ 13 THEN GO
TO 142
143 PRINT PAPER 4; INK 6;AT 20,
0;"  "
148 LET bx=INT (RND*16)+2: LET
by=1: LET ym=1
146 LET xm=1: IF RND>.5 THEN LE
T mx=-1
150 PAPER 2
160 PRINT AT basa,0;"O";AT base
+1,0;"E"
161 LET x$=INKEY$: IF x$<>"7" A
ND INKEY$<>"6" THEN GO TO 170
162 PRINT PAPER 6; INK 6;AT bas
a+(x$="7"),0;" ": LET base=base+
(x$="6" AND basa<16)-(x$="7" AND
base>2)
163 PRINT PAPER 2; INK 0;AT bas
e,0;"D";AT basa+1,0;"E"
170 PRINT PAPER 6; INK 1;AT bx,
by;"A"
180 LET ox=bx: LET ay=by
190 LET bx=bx+xm: LET by=ay+ym
195 IF oy=0 THEN FOR a=1 TO 10:
BEEP .01,0: OUT 254,a: NEXT a:
BORDER 5: GO TO 1000
200 IF bx=1 OR bx=16 THEN LET b
x=ox: LET by=oy: LET xm=-xm: GO
TO 190
201 IF by=30 THEN LET ym=-ym
210 IF ATTR (bx,by)=16 AND by=0
THEN LET ym=-ym: LET by=oy: LET
bx=ox: GO TO 190
220 IF ATTR (bx,by)<>54 AND by>
19 THEN BEEP .01,40: LET sc=sc+(
by-19): PAPER 4: PRINT AT 0,11-F
```

BY DANNY ROSS

RUNS ON A SPECTRUM IN 48K

BREA

This is a version of the classic arcade game — turned on its side! The player attempts to knock out as many multi-coloured bricks from a wall on the opposite side of the screen

The author reckons his version of Breakout is easier to play as you get more time to position the bat in time to hit the oncoming ball

This version also includes a Hall of Fame feature which can hold up to five top scores This is displayed at the end of each game The last competitor's score is also displayed — so you know just what to beat when you are playing against friends

When the game starts each player gets five balls — these are lost if they get behind the players' bat The numbers below the row of bricks correspond to the score value of each brick Each time all the bricks are knocked out the wall rebuilds itself and you get another crack at it — increasing your score

The program is divided into three main parts One to set up the screen, another to play the game and the third to update the Hall of Fame

Part one sets up all the functions needed
FN a(x): is used when doing fancy scoring, ie 006, 056 etc
FN b(x): returns 1 if x is even Used to see which part of a brick was hit.
FN c(x) returns 1 if x is odd

Part one also sets up the Hall of Fame and calls subroutine to set up the user\defined graphics

Part two allows you to move your bat and moves the ball according to the x y directions in xm and ym The variable xm changes when the ball hits the top or bottom of the screen and ym changes when the ball hits a brick, your bat, or the vertical wall on the right

Part three tells the player if he or she is in the Hall of Fame and if so, asks the player for a name and stores it along with the score It also asks if the player wants another game and if so jumps back to line 40

```
N a(sc),sc  PRINT AT bx,by, PAPE
R 6, INK 6," ";AT bx+(FN b(bx))-
(FN c(bx)),by;" "  LET ym=-ym  I
F sc/168=INT (sc/168) THEN PRINT
 AT ox,oy; PAPER 6; INK 6," ": F
OR a=1 TO 3: FOR b=1 TO 40 STEP
5: BEEP .01,b  NEXT b: NEXT a: G
O TO 120
 225 PRINT AT ox,oy; PAPER 6, IN
K 6;" "
 230 GO TO 150
1000 PRINT AT ox,oy, PAPER 6, IN
K 6;" "
1005 LET last=sc
1010 LET ball=ball+1
1020 IF ball<6 THEN GO TO 140
1025 DIM a$(25)
1030 LET a$="Game Over . Press a
ny key"
1035 PAPER 4: INK 0
1040 FOR a=1 TO LEN a$
1050 PRINT AT 20,2+a,a$(a): BEEP
 .05,FN b(a)*10: NEXT a
1060 IF INKEY$="" THEN GO TO 106
0
1070 BORDER 2: PAPER 2  INK 7: C
LS
1080 PAPER 4: INK 0
1090 FOR a=8 TO 5 STEP -1
1100 DIM a$(10+((8-a)*2))
1110 PRINT AT 10-a,a+2;a$
1120 NEXT a
1130 FOR a=6 TO 13: PRINT AT a,7
;a$  NEXT a
1140 PRINT AT 2,13;"HALL"
1150 PRINT AT 3,14;"OF"
1160 PRINT AT 4,11;"{ FAME }"
1165 GO TO 1209
1170 FOR a=1 TO 5
1180 PRINT AT a+5,8;"000 ";h$(a)
 NEXT a
1190 FOR a=1 TO 5: PRINT AT a+5,
11-FN a(h(a));h(a): NEXT a
1195 RETURN
1200 LET last=sc
1209 GO SUB 1170
1210 FOR a=1 TO 5
1220 IF sc<h(a) THEN GO TO 1400
1230 POKE 23658,8: PRINT AT 12,8
;"You equal " AND (sc=h(a));"You
 have " AND (sc>h(a)),a,"st" AND
 (a=1);"nd" AND (a=2);"rd" AND (
a=3),"th" AND (a>3): INPUT "Ente
r your name ",x$: GO TO 2000
1400 NEXT a: PRINT AT 12,8;"Hard
 luck ": GO TO 2800
2000 FOR b=5 TO a+1 STEP -1
2010 LET h(b)=h(b-1)
2020 LET h$(b)=h$(b-1)
2030 NEXT b
2040 LET h(a)=sc: LET h$(a)=x$
2050 GO SUB 1170
2800 PRINT PAPER 2,AT 15,8;"PRES
S -";AT 16,9;"[P]LAY AGAIN",AT
17,9;"[Q]UIT GAME"
2805 POKE 23658,0
2810 LET x$=INKEY$
2820 IF x$="q" THEN BORDER 7: PA
PER 7: INK 0: CLS : GO TO 9999
2830 IF x$="p" THEN BORDER 5: PA
PER 7: INK 0: OVER 0: CLS : GO T
O 40
2840 GO TO 2810
8999 GO TO 9999
9000 REM poke in udg's
9010 FOR a=0 TO 7: READ b: POKE
USR "A"+a,b: NEXT a: POKE USR "B"
,255: POKE USR "C"+7,255: FOR a
=USR "B"+1 TO USR "C"+6: POKE a,
129: NEXT a: POKE USR "D",255: F
OR a=USR "D"+1 TO USR "E"+6: POK
E a,1: NEXT a: POKE USR "E"+7,25
5: RETURN
9020 DATA 0,BIN 00111100,BIN 011
11110,BIN 01111110,BIN 01111110,
BIN 00111100,0,0
9999 STOP
```

Illustration Dorian Cross

KOUT

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The Atari 800XL is unlikely to be available before Christmas, but is in any case no different from the 600 XL except all 64K RAM is built inside box

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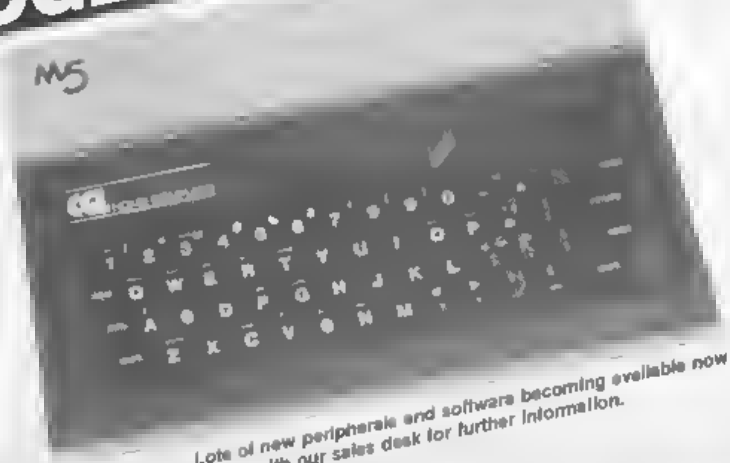

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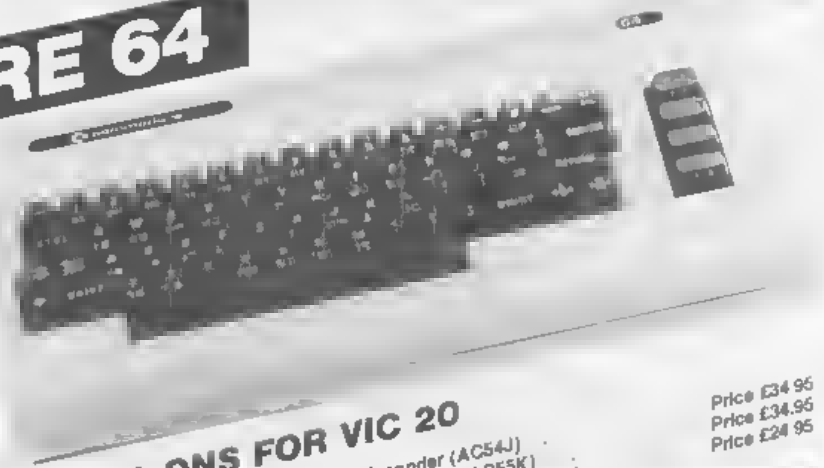

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CYBORG

```
1 REM *** Written for FLORRIE BRIARS ***
2 REM ***      by Craig Shorland      ***
3 RESTORE
4 DIMCO$(4),PL$(2),H$(12),HY(9),HV(9,4),SV(4),EE(4):PT=0:CO=0
5 P$=""BIR2"EIR2"BI"
6 FORGG=1TO4:READCO$(GG):NEXTGG
7 PRINT"████";:P=0:POKE10407,0:GOSUB92
8 TEMPO7:PRINT"█";
9 PL=0
10 PRINT"████";:A$="████████████"
11 B$=A$+"██████"
12 C$="██████████████████████████████/\████▼▼████●◡●████▼▼████"
13 D$=B$+"██████"
14 F$="██████████████████████████████   ████   ████   ████   ████   "
15 G$="██████████████████████████████"
16 H$="█████████████████"
17 P=0:FORG=1TO6:PRINT_." ";
18 R=INT(1+6*RND(1)+1):P=P+R:HY(G)=R
19 FORH=1TOR
20 PRINT"██ ██████ █";
21 NEXT:PRINT:PRINT:PRINT:NEXT
22 PRINT"█                    CYBORG███████──────────":GOTO0222
23 R1=53406:PL=PL+1:IFPL=3THENPL=1
24 FORRO=1TO3
25 POKER1-1,177:POKER1,67:POKER1+1,178:POKER1+39,66:POKER1+40,122:POKER1+41,8
26 POKER1+79,71:POKER1+80,72:POKER1+81,71:POKER1+119,66:POKER1+120,106
27 POKER1+121,86:POKER1+159,78:POKER1+160,54:POKER1+161,77
28 R1=R1+240:NEXTRO
29 IF(CO=1)*(PL=2)THENGOTO228
30 PRINTG$;SPC(39);G$;"WHICH ROW ";PL$(PL);" ";:HM=0
31 O1=53485:O2=53725:O3=53965
32 TI$="000001"
33 GETHM:IF(HM<1)+(HM>6)THENGOTO36
34 IFHY(HM)=0THENGOTO29
35 MUSICP$:PRINTHM:GOTO125
36 N=INT(6*RND(1)+1)
37 IF(TI$="000010")+(TI$="000011")THENGOTO177
38 ONNGOTO39,42,45,48,51,54
39 POKEO1,72:POKEO1+1,71:POKEO1+2,72
40 POKEO1+41,109
41 GOTO33
42 POKEO2,72:POKEO2+1,71:POKEO2+2,72
43 POKEO2+41,109
44 GOTO33
45 POKEO3,72:POKEO3+1,71:POKEO3+2,72
46 POKEO3+41,109
47 GOTO33
48 POKEO1,71:POKEO1+1,72:POKEO1+2,71
49 POKEO1+41,208
50 GOTO33
51 POKEO2,71:POKEO2+1,72:POKEO2+2,71
52 POKEO2+41,208
53 GOTO33
54 POKEO3,71:POKEO3+1,72:POKEO3+2,71
55 POKEO3+41,208
56 GOTO33
57 FORI=25TO19STEP-1:GOTO61
58 POKE4514,1:FORJ=255TO0STEP-5:POKE4513,J:USR(68):NEXTJ:NEXTI:USR(71)
59 GOTO80
60 PRINT"█";
61 IF(HM=1)+(HM=2)THENGOSUB68:GOTO58
62 IF(HM=3)+(HM=4)THENGOSUB72:GOTO58
63 IF(HM=5)+(HM=6)THENGOSUB76:GOTO58
64 FORI=19TO25STEP1:GOTO142
65 POKE4514,1:FORJ=0TO255STEP5:POKE4513,J:USR(68):NEXTJ:NEXTI:USR(71)
66 GOTO23
67 PRINT"█":
68 PRINTA$;
69 PRINTF$
70 PRINTA$;C$
71 RETURN
72 PRINTB$;
73 PRINTF$
74 PRINTB$;C$
75 RETURN
76 PRINTD$;
77 PRINTF$
78 PRINTD$;C$
79 RETURN
80 IFHM=1THENR1=53406:GOTO86
81 IFHM=2THENDG=53525:GOTO89
82 IFHM=3THENR1=53646:GOTO86
83 IFHM=4THENDG=53765:GOTO89
84 IFHM=5THENR1=53886:GOTO86
85 IFHM=6THENDG=54005:GOTO89
86 POKER1+1,77:POKER1+81,0:POKER1+121,0:POKER1+161,0:POKER1+160,67
87 POKER1+79,72:POKER1+80,71
88 GOTO113
89 POKEDG,79:POKEDG-118,77:POKEDG+2,0:POKEDG+41,67:POKEDG+42,0:POKEDG-38,0
90 POKEDG-40,72:POKEDG-39,71
91 GOTO119
92 Q=53248:R=53287:S=54208:T=54247:G=67:Z=0
93 IFZ=4THEN103
94 FORX=QTOR:POKEX,G:NEXT
95 FORY=RTOTSTEP40:POKEY,G:NEXT
```

So this is what happens when Robots decide to play a game! Do you want to join them? Then type in this listing. The computer will set up random numbers of counters in six different rows. You select your row and the number of counters to be knocked out. Then the robots come into it! One of the three tin men on the right hand side of the screen will destroy the number of counters you have decided to wipe out.
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BY CRAIG [illegible]

[illegible]

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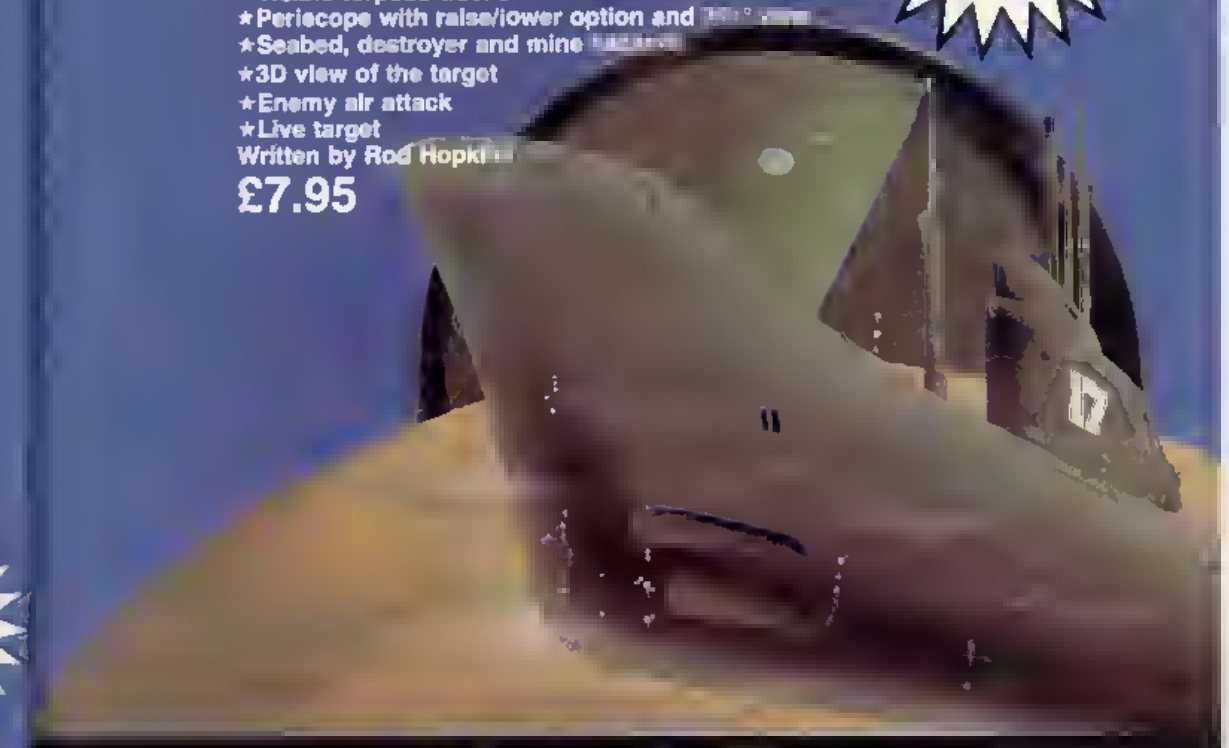

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```
96 FORX=TTOSSTEP-1:POKEX,G:NEXT
97 FORX=STOOSTER-40:POKEX,G:NEXT
98 Q=Q+41:R=R+39:S=S-39:T=T-41
99 IFG=67THENG=208:Z=Z+0.5:GOTO93
100 IFG=208THENG=67
101 Z=Z+0.5
102 GOTO93
103 X$='
104 Y$='
105 Z$='
106 ZY$='
107 PRINTG$;"
108 PRINTH$;"
109 PRINTH$;"
110 PRINTH$;"
111 FORBV=1TO54:FORBO=BVTO0STEP-3:POKE4514,BO:USR(68):NEXTBO:NEXTBV:USR(71)
112 FOPBV=1TO400:NEXT:PRINT"
113 FORXC=1TOF
114 FORM=20TO30:POKE4514,M:USR(68):NEXTM:USR(71)
115 L=F1-3
116 IFPEEK(L)=163THENGOTO136
117 POKEL,62:L=L-1:POKEL+1,0:GOTO116
118 NEXTXC
119 FORNC=1TOF
120 FORM=20TO30:POKE4514-M:USR(68):NEXTM:USR(71)
121 L=DG-1
122 L=L-1:IFPEEK(L)=163THENGOTO136
123 POKEL,62:L=L-1:POKEL+1,0:GOTO116
124 NEXTXC:GOTO64
125 FOPBN=1TO200:NEXTBN:GOTO128
126 FORHJ=1TO500:NEXTHJ
127 TEMPO7
128 PRINTG$;"HOW MANY ^                                    ";
129 GETF:IFF=0THEN129
130 IF(F>HV(HM))+(F<1)THENPPINTG$;"STOP MUCKING AROUND , RE-ENTEF
131 IF(F>HV(HM))+(F<1)THENMUSIC"_CR_CR_CR":GOTO126
132 IF(F>0)*(HV(HM)=0)THENPPINTG$;"&TOP MUCKING AROUND , RE-ENTER
133 IF(F>0)*(HV(HM)=0)THEN126
134 PRINTG$;"
135 GOTO57
136 POKEL+1,0
137 FORNJ=2TO25:POKE4514,HJ:USR(68):NEXTHJ:USR(71):NV(HM)=NV(NM)-1:P=P-1
138 IF(P=0)*(CO=1)THEN168
139 IFP=0THENPOKEL+40,0:POKEL+39,0:POKEL,0:POKEL-1,0:GOTO168
140 POKEL+40,0:POKEL+39,0:POKEL,0:POKEL-1,0:NEXTXC
141 GOSUB64
142 IF(HM=1)+(HM=2)THENGOSUB68
143 IF(HM=3)+(HM=4)THENGOSUB72
144 IF(HM=5)+(HM=6)THENGOSUB76
145 GOTO65
146 MUSICP$:PRINT"
147 INPUT"
148 IFLEN(PL$(1))>10THENPRINT"
149 PRINT"
150 FORCH=1TO200:NEXTCH
151 GETCH$:IFCH$=""THEN151
152 IFCH$="Y"THENCO=1:RETURN
153 IFCH$="N"THENGOTO155
154 GOTO151
155 MUSICP$:PRINT"
156 PRINT"
157 INPUT"
158 IFLEN(PL$(2))>10THENPRINT"
159 IFLEN(PL$(2))>10THENGOTO155
160 RETURN
161 PRINT"
162 PRINT"
163 FORWE=1TO200:NEXTWE
164 GET1$:IF1$=""THEN164
165 IF1$="Y"THENPRINT"
166 IF1$="N"THENPRINT"
167 GOTO164
168 IFCO=1THENPOKEL+40,0:POKEL+39,0:POKEL,0:POKEL-1,0
169 TEMPO7:MUSIC"
170 IFCO=1THENGOTO263
171 PRINT"
172 PRINT"
173 PRINT"
174 GETU$:IFU$=""THEN174
175 IFU$="Y"THENRUN
176 IFU$="N"THENPRINT"
177 DATA"COME ON - WE NAVEN'T GOT ALL DAY"
178 DATA"WE NAVE BETTER THINGS TO DO".
179 DATA"HOW MUCH LONGER WILL YOU BE ?"
180 DATA"THERE IS A LIMIT TO OUR PATIENCE"
181 FH=INT(4*RND(1)+1)
182 RT=RT+1
183 IFRT=4THENPRINT"":PRINTG$1"WILL YOU PLEASE HURRY UP !!!";
184 IFPT=4THENFOPQQ=1TO14:POKE57346,0:MUSIC"C0":POKE57346,255:MUSIC"D":NEXTQQ
185 IFRT=4THENRT=0:GOTO187
186 PRINTG$;CO$(FH):MUSICP$
187 FORQL=1TO1400:NEXTQL
188 PRINTG$;SPC(39)
189 GOTO29
```

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```
190 H$(1)="▩                Instructions"
191 H$(2)="
192 H$(3)="      This is the game of CYBORG."
193 H$(4)="▩     It is played by choosing a row"
194 H$(5)="▩ in which there is a random number of"
195 H$(6)="▩counters. The winner is the player who"
196 H$(7)="▩            takes the last piece."
197 H$(8)="▩You can either play another humanoid"
198 H$(9)="▩   or challenge ME....if you dare."
199 H$(10)="▩  After you have chosen the number of"
200 H$(11)="▩          counters to be eliminated."
201 H$(12)="    MY ROBOTS WILL DESTROY THEM !!"
202 FORI=1TO12
203 FORJ=1TOLEN(H$(I))
204 PRINTMID$(H$(I),J,1);
205 IF(ASC(MID$(H$(I),J,1))=32)THENGOTO207
206 JJ=1:POKE4514,JJ:USR(68):USR(71)
207 NEXTJ:PRINT"":NEXTI
208 PRINTTAB(2);"1 ### ### ### ### ###";TAB(36);"▩"
209 PRINTTAB(2);"  ### ### ### ### ###";TAB(36);"▩"
210 PRINTTAB(36);"▩"
211 PRINTTAB(36);"▩"
212 PRINTTAB(36);"▩"
213 FORXC=1TO5
214 FORM=20TO30:POKE4514,M:USR(68):NEXTM:USR(71)
215 L=54082
216 IFPEEK(L)=163THENGOTO218
217 POKEL,62:L=L-1:POKEL+1,0:GOTO216
218 POKEL+1,0:FORHJ=1TO20:POKE4514,HJ:USR(68):NEXTHJ:USR(71
219 POKEL+39,0:POKEL,0:POKEL-1,0:POKEL+40,0
220 NEXTXC
221 FORQL=1TO500:NEXTQL:PRINT"▩":GOTO146
222 PRINTG$;"ARE THESE RANDOM ENOUGH ?"
223 GETRE$:IFRE$=""THEN223
224 IFRE$="Y"THENPRINTG$;SPC(39);GOSUB274:GOTO23
225 IFRE$="N"THENPRINT"▩▩▩▩";:GOTO17
226 GOTO223
227 REM▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩                  ":MUSICP$
228 PRINTG$;"MY MOVE'
229 GOSUB250:FORJ=1TO4:SV(J)=0
230 FORI=1TO6:SV(J)=SV(J)+HV(I,J):NEXTI
231 SV(J)=SV(J)-INT(SV(J)/YY)*YY
232 NEXTJ
233 W=0:FORJ=1TO4:W=W+SV(J):NEXT
234 IFW=0THEN247
235 I=1
236 FORJ=1TO4
237 EE(J)=SV(J)+HV(I,J):EE(J)=EE(J)-INT(EE(J)/2)*YY
238 NEXT
239 EE=8*EE(4)+4*EE(3)+2*EE(2)+EE(1)
240 IF(HY(I)=0)+(EE)=HY(I))THEN245
241 F=HY(I)-EE:HM=1
242 PRINTG$;"I'LL TAKE";F;" FROM ROW";I;".":MUSICP$
243 FORZ=0TO750:NEXT
244 GOTO256
245 I=I+1:IFI<=6THEN236
246 I=1:GOTO236
247 I=INT((6+1)*RND(1))
248 IF(HY(I)=0)+(I=0)+(I>9)THEN247
249 F=1:HV(I)=HV(I)-1:GOTO242
250 YY=2:FORI=1TO6
251 Y1=HY(I)/YY:HV(I,1)=HY(I)-INT(Y1)*YY
252 Y2=Y1/YY:HV(I,2)=INT(Y1)-INT(Y2)*YY
253 Y3=Y2/YY:HV(I,3)=INT(Y2)-INT(Y3)*YY
254 Y4=Y3/YY:HV(I,4)=INT(Y3)-INT(Y4)*YY
255 NEXT:RETURN
256 IFI=1THENHM=1
257 IFI=2THENHM=2
258 IFI=3THENHM=3
259 IFI=4THENHM=4
260 IFI=5THENHM=5
261 IFI=6THENHM=6
262 GOTO57
263 PRINT"▩'
264 FORI=53248TO53287STEP2:POKEI,208:POKEI+1,67:NEXTI
265 FORI=53327TO54207STEP80:POKEI,208:POKEI+40,67:NEXTI
266 FORI=54247TO54208STEP-2:POKEI,67:POKEI-1,208:NEXTI
267 FORI=54208TO53248STEP-80:POKEI,208:POKEI-40,67:NEXTI
268 PRINT"▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩SOME OF US HAVE IT"
269 PRINT"▩▩▩▩▩▩▩▩▩AND SOME OF US DON'T"
270 PRINT"▩▩▩▩▩▩▩▩▩▩▩▩FANCY ANOTHER GAME ?"
271 PRINT"▩▩▩▩▩▩▩▩▩▩
272 GOSUB281
273 GOTO174
274 N=100
275 FORG=1TO6:V=1:FORC=NTO0STEP-1:POKE4514,C:USR(68):NEXTC
276 N=N-15:NEXTG
277 RETURN
278 B=1:FORA=255TO0STEP-1.5
279 POKE4513,B:USR(68):POKE4513,A:USR(68):NEXTA:USR(71)
280 RETURN
281 FORGH=1TO5:FORNG=255TO1STEP-9:POKE4514,GN:POKE4513,HG:USR(68)
282 NEXTNG,GH:USR(71)
283 MUSIC"C"
284 RETURN
```

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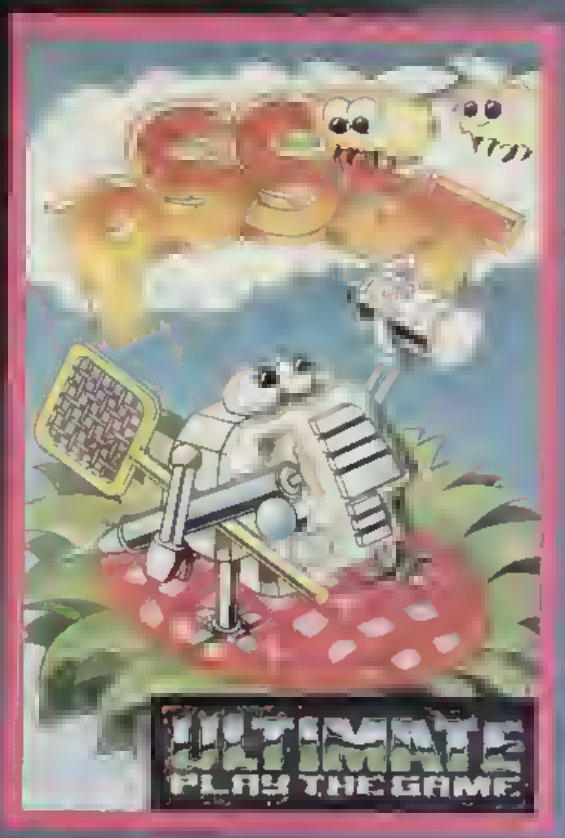

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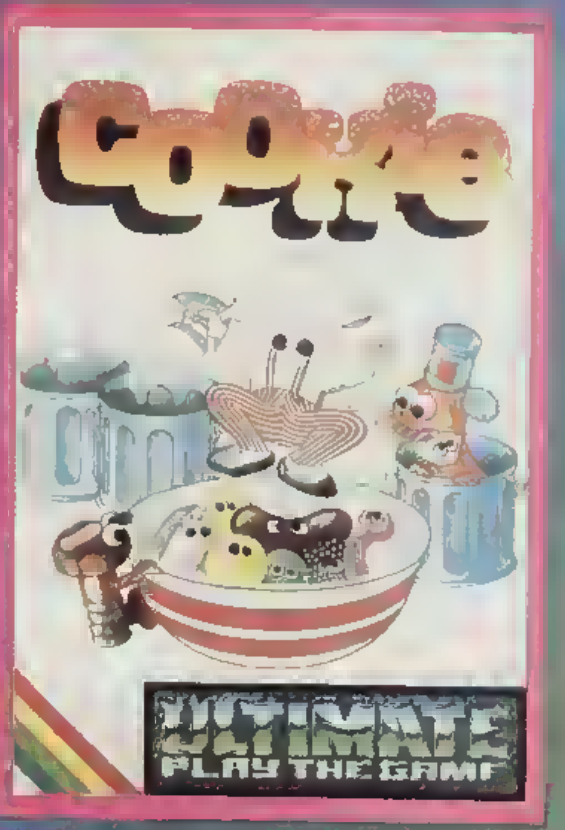

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The evil Trammers have created a minefield in the planets' atm[illegible] is difficult to say the least! Once the landing pads have been used twice they [illegible] even harder.

Full instructions are included in the program. Happy landings

Machine Code addresses

[illegible] — screen scroll to the left routine. Locations 1536 and 1537 [illegible] start address for video RAM.

[illegible] — moves the shuttle automatically up or down without [illegible] this moves the shuttle in the corresponding position [illegible] and 205d have the current address for the [illegible]

[illegible] determines upward or downward movement. [illegible] 230d [illegible] causes downward movement. A 190d causes upward [illegible]

Note: Lines 500-630 are a fairly fast method of checking for [illegible] the player missile graphics rather than using the slower IF [illegible]

All the routines for sensing joystick positions, [illegible] the movement of player missile graphics are carried [illegible] game.

Please take care when typing in DATA [illegible] code routines and a typing error [illegible] the whole system to crash when you run [illegible]

Illustration: John Higgins

```
10 GRAPHICS 17:A=PEEK(560)+256*PEEK(561)
+4:POKE A-1,71:DIM MX(5),MY(5),V(10),W(1
0),PAD(2)
20 PRINT #6;"     LUNAR RESCUE"
30 PRINT #6:? #6:" WOULD YOU LIKE THE"
40 PRINT #6;"     INSTRUCTIONS"
50 ? #6:? #6;"          Y/N":SETCOLOR 0,0,
14
60 OPEN #1,4,0,"K":NS=0
70 GET #1,A:IF A=78 THEN 100
80 IF A=89 THEN 10000
90 GOTO 70
100 GRAPHICS 23:SETCOLOR 0,0,10:SETCOLOR
 1,2,8:SETCOLOR 2,12,14
110 A=PEEK(560)+256*PEEK(561)+4:POKE A-1
,70:POKE 87,1:POKE A+2,6
120 PRINT #6;"SCORE ----------":? #6;
"LIFE 5"
121 DATA 217,30,193,30,173,30,162,30,144
,60,173,60,144,30,162,30,173,30,193,30,2
17,60
122 FOR MUSIC=0 TO 10:READ NTE,DLY:V(MUS
IC)=NTE:W(MUSIC)=DLY:NEXT MUSIC
140 COLOR 1:POKE 87,7
150 FOR C=0 TO 20:PLOT 0,75:DRAWTO C,95:
PLOT 159,75:DRAWTO 159-C,95:NEXT C
160 FOR C=90 TO 95:PLOT 0,C:DRAWTO 159,C
:NEXT C:NS=0
170 FOR C=0 TO 154 STEP 4:PLOT C,89:PLOT
 C+1,89:NEXT C:COLOR 2
180 DATA 30,70,132,2,78,8,84,14,89,157,7
6,151,82,145,87
190 FOR A=0 TO 2:READ X
200 GOSUB 2700
220 NEXT A:COLOR 3
230 FOR A=0 TO 5:READ X,Y:MX(A)=X:MY(A)=
Y:AST=1
```

```
240 NS=A:GOSUB 3000:NEXT A:NS=0
250 GOSUB 5000
300 DATA 173,0,6,174,1,6,133,206,134,207
,162,0,160,0,177,206,141,2,6,200,177,206
,136,145,206,200,192,39
310 DATA 208,245,173,2,6,145,206,165,206
,24,105,40,144,2,230,207,133,206,232,224
,45,208,217,104,96
320 FOR A=1570 TO 1622:READ BYTE:POKE A,
BYTE:NEXT A
330 A=PEEK(88)+256*PEEK(89)
340 B=A+(15*40)
350 C=INT(B/256):D=B-(C*256)
360 POKE 1536,D:POKE 1537,C
370 DATA 173,120,2,201,7,208,13,174,5,6,
224,200,240,6,238,5,6,24,144,14
380 DATA 201,11,208,10,174,5,6,224,48,24
0,3,206,5,6,174,5,6,142,0,208,201,13,240
,2,104,96
390 DATA 160,0,169,0,145,208,200,192,7,2
08,249,230,208,160,0,185,10,6,145,208,20
0,192,7,208,246,104,96
400 FOR A=1630 TO 1702:READ BYTE:POKE A,
BYTE:NEXT A
410 A=PEEK(106)-24:POKE 54279,A:POKE 532
77,3:POKE 559,46:POKE 623,1:POKE 705,202
:POKE 706,54
420 Y=23:X=114:PM=(256*A)+512:K=A+2:PF=5
3252:PC=53260:SC=0:L1=5:PT=53262:COLC=53
278
423 FOR CV=0 TO 2:PAD(CV)=0:NEXT CV
425 FOR Z=PM TO PM+512:POKE Z,0:NEXT Z:P
OKE 704,138:POKE 1687,230
430 RESTORE 440:P=0:FOR Z=PM+23 TO PM+29
:READ BYTE:POKE Z,BYTE:POKE 1546+P,BYTE:
P=P+1:NEXT Z
440 DATA 24,36,60,126,102,66,66
450 DATA 24,60,102,231,195,195,129,129,1
29,129,24
460 POKE 53248,114:FOR Z=PM+128+20 TO PM
+128+29:READ BYTE:POKE Z,BYTE:NEXT Z:POK
E 53249,110:POKE 53257,1
470 POKE PM+256+22,24:POKE 53250,110:POK
E 53258,1:POKE 1541,114
480 POKE 208,23:POKE 209,K:POKE 53256,0
490 POKE COLC,0:L=USR(1630):L=USR(1676):
L=USR(1630):L=USR(1570)
500 ON PEEK(PF) GOTO 1000,2000
510 ON PEEK(PC) GOTO HELL,1000
520 ON PEEK(PT) GOTO 6500
530 GOTO 490
1000 FOR A=0 TO 40:POKE 53256,INT(RND(0)
*2):D=RND(0)*255:Q1=RND(0)*255:SOUND 0,D
,8,8:SOUND 1,Q1,8,8
1010 POKE 704,A*5:FOR B=0 TO 5:NEXT B:NE
XT A
1020 POKE 704,0:POKE 53256,0:FOR B=8 TO
0 STEP -2:SOUND 0,Q,8,B:SOUND 1,Q1,8,B:F
OR C=0 TO 100:NEXT C:NEXT B
1030 POKE 1687,230:L1=LI-1:IF  NOT L1 TH
EN 0000
1040 POKE 87,1:POSITION 5,1:? #6:L1:GOTO
 425
2000 GOTO 2060
2005 POKE 1687,198:GOSUB 2500
2010 L=USR(1676):L=USR(1676):L=USR(1676)
2020 COLOR 0:GOSUB 3000:NS=NS+1
2030 IF NS<6 THEN POKE 704,206:GOTO 490
```

BY DAVID HAYBARTH

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I enclose a cheque/postal order value £
payable to DIAND SOFTWARE

* Postage and package is included (for U.K. only)

```
2040 GOSUB 4000:NS=0:GOSUB 2500:GOSUB 25
00:GOSUB 2500:GOSUB 2500:COLOR 3
2050 FOR A=0 TO 5:NS=A:GOSUB 3000:NEXT A
:NS=0:POKE 1687,230:COLOR 2:X=30:GOSUB 2
700:X=70:GOSUB 2700:X=132
2051 GOSUB 2700:COLOR 0:FOR CV=15 TO 60:
PLOT 0,CV:DRAWTO 159,CV:NEXT CV:AST=AST+
1:IF AST>10 THEN AST=10
2052 KK=PEEK(1541):FOR CV=KK TO 114 STEP
 SGN(114-KK):POKE 53248,CV:SOUND 0,CV,8,
8
2053 NEXT CV:POKE 1687,198:KK=PEEK(208):
FOR CV=KK TO 23 STEP -1:L=USR(1676):SOUN
D 0,CV,8,8:POKE 704,CV
2054 FOR CB=0 TO 2:NEXT CB:NEXT CV
2055 SOUND 0,0,0,0:GOSUB 5000:GOTO 423
2060 XCO=PEEK(1541):IF XCO<83 AND XCO>72
 THEN PAD(0)=PAD(0)+I:GOTO 2005
2061 IF XCO>111 AND XCO<123 THEN PAD(1)=
PAD(1)+I:GOTO 2005
2062 IF XCO>173 AND XCO<185 THEN PAD(2)=
PAD(2)+I:GOTO 2005
2063 GOTO 1000
2500 POKE 87,1:FOR Z=0 TO 19:SC=SC+I:POS
ITION 6,0:? #6;SC:FOR B=0 TO 5:NEXT B:SO
UND 0,Z,10,8
2510 NEXT Z:SOUND 0,0,0,0:RETURN
2700 POKE 87,7:FOR B=X TO X+5:PLOT B,89:
DRAWTO B,85:NEXT B
2710 FOR B=0 TO 5:PLOT X+5+B,86-B:DRAWTO
 X-B,86-B:NEXT B:RETURN
3000 POKE 87,7:PLOT MX(NS),MY(NS):PLOT M
X(NS),MY(NS)-1:PLOT MX(NS)+2,MY(NS)
3010 PLOT MX(NS)+2,MY(NS)-1:PLOT MX(NS)+
1,MY(NS)-2:PLOT MX(NS),MY(NS)-3:DRAWTO M
X(NS)+2,MY(NS)-3
3020 PLOT MX(NS)+1,MY(NS)-4:RETURN
4000 FOR MUSIC=0 TO 10:SOUND 0,V(MUSIC),
10,8:FOR EX=0 TO W(MUSIC):NEXT EX:NEXT M
USIC:SOUND 0,0,0,0
4010 RETURN
```

```
4100 STOP
5000 COLOR 1:FOR A=0 TO AST
5010 X=INT(RND(0)*150)+5
5020 Y=INT(RND(0)*39)+21
5030 PLOT X,Y:PLOT X,Y-1:PLOT X-1,Y-2:DR
AWTO X+1,Y-2:PLOT X-2,Y-3:DRAWTO X+2,Y-3
5040 PLOT X-1,Y-4:DRAWTO X+1,Y-4:PLOT X,
Y-5:PLOT X,Y-6:NEXT A:RETURN
6500 GOSUB 2500:POKE 1687,230:L=USR(1676
):L=USR(1676):POKE 704,138:L=USR(1676)
6520 IF XCO<83 AND XCO>72 THEN GOTO 6560
6530 IF XCO>111 AND XCO<123 THEN GOTO 65
70
6540 IF XCO>173 AND XCO<185 THEN GOTO 65
00
6550 GOTO 1000
6560 IF PAD(0)=1 THEN GOTO 490
6561 X=30:COLOR 0:GOSUB 2700:GOTO 490
6570 IF PAD(1)=1 THEN GOTO 490
6571 X=70:COLOR 0:GOSUB 2700:GOTO 490
6580 IF PAD(2)=1 THEN GOTO 490
6590 X=132:COLOR 0:GOSUB 2700:GOTO 490
8000 GRAPHICS 18:POSITION 5,2:? #6;"-GAM
E OVER-":POSITION 5,3:? #6;"----- -----"
:POSITION 5,1
8005 POKE 53248,0:POKE 53249,0:POKE 5325
0,0
8010 ? #6;"----- -----":POSITION 3,5:? #
6;"SCORE:";SC:SETCOLOR 0,8,12:SETCOLOR 2
,3,6
8020 IF SC>HS THEN POSITION 3,7:? #6;"NE
W HIGH SCORE!!":HS=SC
8030 PRINT #6;"HIGH SCORE:";NS:GOSUB 400
0
0040 GET #1,KEY:RESTORE :GOTO 100
10000 GRAPHICS 0:SETCOLOR 2,0,0:? "
     LUNAR RESCUE":? "                ----- --
----"
10010 ? "MISSION:";? "Save the innocent
people on the planetNOXA"
10020 ? :? "There is one problem'(as usu
al)"
10030 ? "The TRAMMER8 have laid a minefi
eld in the planets atmosphere,so getting
 out is a little tricky"
10040 ? "Avoid them by--GUESS WHAT--";?
" MOVE OUT THE WAY"
10060 ? "Landing can be done at any spee
d on   the landing pads.Once landing is
     complete ";
10070 ? "docking must be accomplished.Th
is is  done by directing your ship  to t
he red spot in the starbase"
10080 ? "You direct your ship by using t
he        JOYSTICK in PLYR 1 socket"
10090 ? "Pushing the stick down causes t
he shipto thrust in its current directio
n"
10100 ? "PRESS ANY KEY":GET #1,KEY:? "}"
10110 ? "When leaving the planets surfac
e the  ship will be green,showing that a
 man is on board."
10120 ? "When landing,the ship will be b
lue,   showing an empty ship."
10130 ? "NOTE You have NO battle compute
r,so   firing at the mines cannot be don
e."
10140 ? " Once the landing pads have bee
n used twice they will disintegrate due
to   the extreme heat of";
10150 ? " the retro rockets."
10160 ? "PRESS AWY KEY WHEN YOU ARE READ
Y TO   START":SET #1,KEY:GOTO 100
```

```
  80*TV255
  90*FX15
 100HI=0 MODE7:VDU23;8202,0;0;0
.:PRINTTAB(14,10)CHR$134CHR$141"
Q*BILL"'TAB(14)CHR$134CHR$141"Q*
BILL",TAB(11,15),"BY A.Brown 198
3":Z=INKEY(500)
 110*FX15
 120MODE1:PRINTTAB(11,10)"INSTR
UCTIONS?"; A1$=GET$ PROCINIT IFA
1$="Y"THENCLS PROCINSTR
 130MODE2:PROCINIT PROCPYRAMID
 140GCOL0,3
 150*FX9 2
 160*FX10 2
 170*FX11 30
 180*FX12 30
 190MOVE280,600:PRINTQ$
 200*FX15
 210XX=280:YY=600 FIL=0:Z=1:X2=
0 Y2=0
 220T1=TIME+100:BX=600 BY=1000
MOVEBX,BY PRINTW$ SX=600 SY=600:
IFSH>1THENMOVESX,SY:PRINTSN$
 230A$="" A$=INKEY$(1)
 240*FX15,1
 250IFA$=""THEN370
 260MOVEXX,YY PRINTQ$
 270IFA$="Z"THENXX=XX-80:YY=YY-
100
 280IFA$="A"THENXX=XX-160
 290IFA$="D"THENXX=XX+160
 300IFA$="Q"THENXX=XX-80 YY=YY+
100
 310IFA$="E"XX=XX+80:YY=YY+100
 320IFA$="C"XX=XX+80:YY=YY-100
 330SOUND1,1,10,1
 340Z=FNCHECK(XX,YY,0) IFZ=-9TH
EN480
 350PROCFILL(XX,YY) IFFIL>27 TH
EN 440
 360MOVEXX,YY:PRINTQ$
 370IFZ<1THENSOUND1,2,150,1:SOU
ND2,2,100,1:SOUND3,2,60,1:PROCFI
LL(XX,YY) PROCFALL:GOTO520
 380IFTIME<T1 THEN410ELSET1=TIM
E+SP
 390PROCDIR(BR,W$,BX,BY):BX=BX+
X2:BY=BY+Y2 IFFNCHECK(BX,BY,1)=-
9THEN480
 400IFSH>1:PROCDIR(6,SN$,SX,SY)
 SX=SX+X2:SY=SY+Y2:IFFNCHECK(SX,
SY,1)=-9THEN480
 410IFSC+FIL>HI HI=SC+FIL
 420VDU4 PRINTTAB(0,2)"Sc ";SC+
FIL PRINTTAB(13,2)"Lives ";LIV;T
AB(0,3)"Sh ";SH+1;TAB(13,3)"HI "
;HI:VDU5
 430GOTO230
 440*FX15
 450FIL=0:FORN=-15TO1:SOUND1,N,
200,1:NEXT:SP=SP-50:CLG:IFSP<1 A
ND BR<6THEN BR=6:SP=100
 460SH=SH+1:IFSH MOD 5=0 LIV=LI
V+1:SOUND3,1,100,10
 470CLG:PROCPYRAMID:SC=SC+28:GO
TO190
 480MOVEXX,YY:PRINTZZ$:MOVEXX+1
00,YY:GCOL0,8
 490PRINT"!*#@" MOVEXX+100,YY-3
0 PRINT"\+~$"
 500*FX15,1
 510FORJ=1TO5000:NEXT
 520LIV=LIV-1:IFLIV<1 THEN540
 530SC=SC+FIL:CLG:GCOL0,3:PROCP
YRAMID:GOTO190
 540*FX15,1
 550RESTORE570
 560VDU4 PRINTTAB(13,2)"Lives "
,LIV,TAB(5,14);:COLOUR135:COLOUR
6:FORN=1TO9:READA$:PRINTA$;:FORA
=1TO700:NEXT:NEXT
 570DATAG,A,M,E," ",O,V,E,R
 580*FX15,1
 590Z=GET:GOTO130
 600END
 610DEFPROCINIT:FIL=0:SC=0 LIV=
3 SP=200
 620VDU5,19,0,4,0,0,0:@%=0:BR=2
:SH=0
 630VDU23,8202,0,0,0,
 640VDU23,224,7,15,27,17,49,49,
59,62
 650VDU23,225,192,224,176,24,24
,24,184,248
 660VDU23,226,60,24,25,15,7,4,4
,29
 670VDU23,227,112,240,224,192,1
92,64,64,192
 680VDU23,228,0,0,0,8,12,8,0,1
 690VDU23,229,0,0,0,128,192,128
,0,0
```

```
  700VDU23,230,3,7,6,0,0,0,0,0
  710R$=CHR$18+CHR$3+CHR$1 B$=CH
R$18+CHR$3+CHR$3.M$=CHR$18+CHR$3
+CHR$5.C$=CHR$18+CHR$3+CHR$6
  720R$=R$+CHR$224+R$+CHR$225+CH
R$8+CHR$8+CHR$10+R$+CHR$226+R$+C
HR$227
  7305$=B$+CHR$228+B$+CHR$229
  740N$=M$+CHR$230
  7500$=R$+CHR$8+CHR$8+CHR$11+S$
+CHR$8+CHR$8+CHR$10+N$
  760VDU23,231,15,31,57,109,227,
247,255,255
  770VDU23,232,240,248,252,254,2
55,255,255,255
  780VDU23,233,255,255,255,255,1
27,63,31,15
  790VDU23,234,255,255,255,255,2
54,252,248,240
  800VDU23,235,0,0,6,12,28,8,0,0
  810VDU23,236,0,3,5,15,7,0,0,0
  820VDU23,237,0,128,192,224,176
,48,96,192
  830VDU23,238,1,3,6,12,12,6,3,1
  840VDU23,239,152,36,34,6,12,24
,176,224
  850W$=C$+CHR$231+C$+CHR$232+CH
R$8+CHR$8+CHR$10+C$+CHR$233+C$+C
HR$234
```

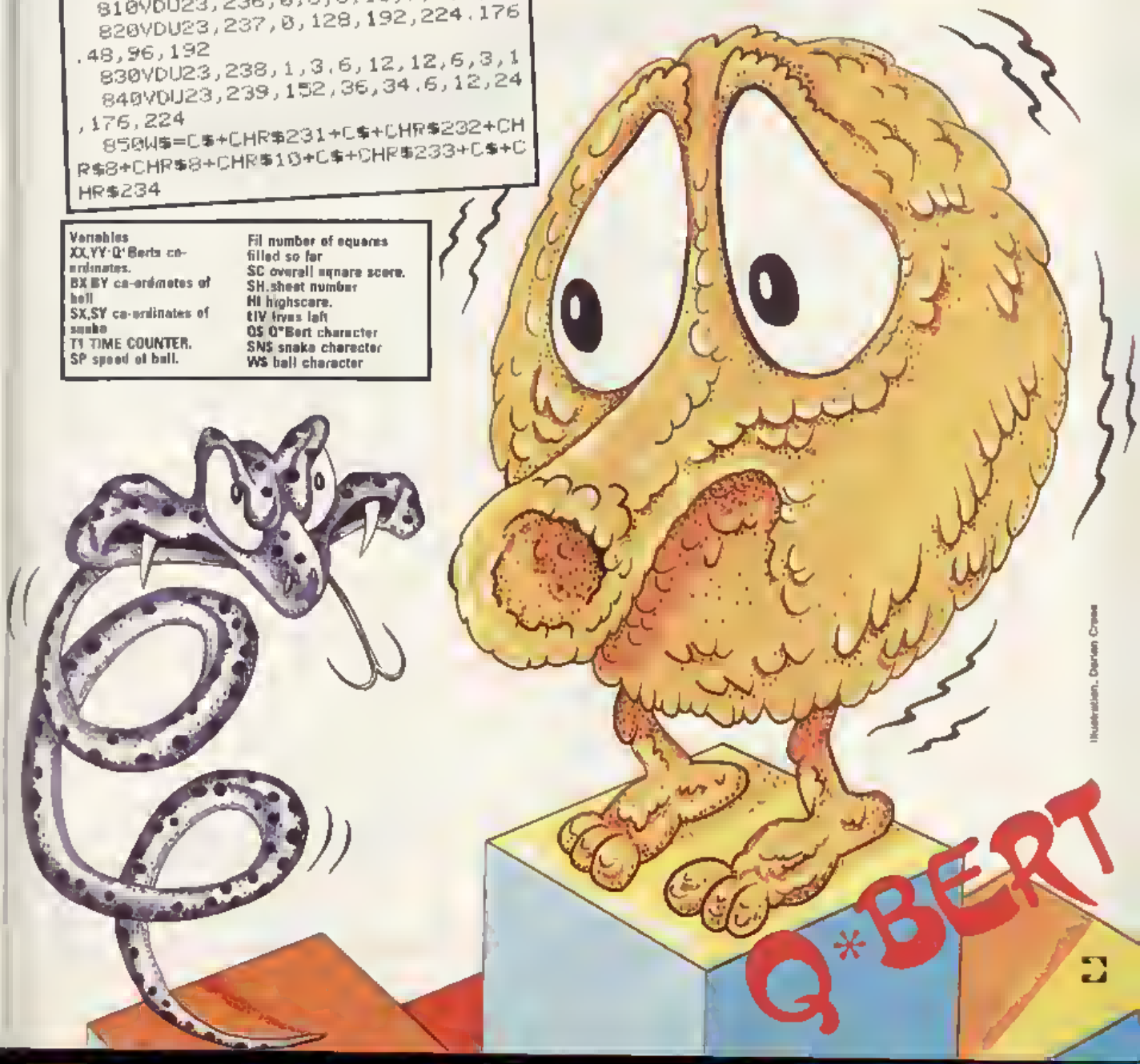
Variables	
XX,YY Q*Berts co-ordinates.	Fil number of squares filled so far
BX,BY co-ordinates of ball	SC overall square score.
SX,SY co-ordinates of snake	SH.sheet number
T1 TIME COUNTER.	HI highscore.
SP speed of ball.	tIV lives left
	Q$ Q*Bert character
	SN$ snake character
	W$ ball character

This little chap has been turning the air blus — and pyramids various assorted colours — in the arcades for some time now. But now the cursing Q*Bert has been cleaned up for the BBC B by enterprising author Andrew Brown. Just like the arcade game of the same name you have to help Q*Bert change the colour of a pyramid built out of cubes. He does this by leaping from cube to cube using his amazing jumping powers. However, there are hazards which plague Q*Bert — like a giant beach ball which bounces around after him and in later screens there's Coily the snake to contend with. Also the ball speeds up as you get better at the game and conquer more pyramids. You get three lives and to start with — and an extra life after every sixth screen.

You won't get past the third screen without a lot of practice. So if you want that extra life to come a bit sooner why not change the 5 in line 460 to a smaller value. The initial speed of the ball is set in line 610 (variable SP). Make it smaller (in units of 50) to make it go faster.

RUNS ON A BBC B IN 7K

BY ANDREW BROWN



Illustration, Darren Crowe

MR CHIP SOFTWARE

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This is it, the ultimate Fruit Machine for the VIC with nudge, hold and respin 100% machine code. "Overall Jackpot is a beautifully written simulation giving superb graphics, animation and use of colour. In fact, this program makes Commodore's Fruit Machine cartridge look unbelievably cheap and nasty." Home Computing Weekly No 20 19/7/83 . . . . . £5.50

KWAZY KWAKS
Accuracy and speed are required for this Shooting Gallery, superb use of colour and graphics in this new and challenging game from the author of **Jackpot**. 100% machine code, joystick or keyboard control . £5.50

PACMANIA
Choose your own game from the following options — difficulty 1-3, speed 1-3, size of maze 1-3, visible or invisible maze, still or moving power pills, define your own key controls, any combination, if this is your type of game, then this is the one for you, for the 3K expand. VIC £5.50

SNAKE BYTE
Guide your ever hungry snake round the screen, eating the flies and wasps, to stay alive you must avoid the deadly mushrooms, quick reactions are required for this biting game, keyboard control, for the unexpanded VIC £5.50

BUGSY (Joystick Only)
This is a Minefield with a difference as you step on the stones whilst collecting purple boxes which give you both time and points, they disappear from beneath your feet. DO NOT DESPAIR! "BUGSY" will randomly replace the stones but avoid bumping into him or its sudden death! An original compulsive and challenging game. £5.50

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JACKPOT 64: At last its here, specially written for the 64, by the author of "JACKPOT" the ultimate Fruit Machine program for the VIC £5.50
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WESTMINSTER
A game for up to four players, can you lead the party of your choice and win the general election, you tour the 60 constituencies (seats) buying votes, when you can, (just like the real thing), this must be one of the first board type games specifically written for the computer Why play on your own, have fun with your family and friends playing WESTMINSTER £5.50

RED ALERT: A game for 1-4 players, with sound and graphics, make money in casinos, commit robbery, hide from the police, hire secret agents, (some of whom can be treacherous), negotiate for weapons, find and attack the secret rocket base to launch the missile, and watch the havoc and destruction caused. There's no turning back from "RED ALERT" (available from 1st Nov) £5.50

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```
  860E$=CHR$18+CHR$3+CHR$7+CHR$2
35
  870W$=W$+CHR$8+CHR$8+CHR$11+E$
  8803N$=M$+CHR$236+M$+CHR$237+C
HR$8+CHR$8+CHR$10+M$+CHR$238+M$+
CHR$239
  890ENVELOPE1,1,12,8,2,4,2,2,12
6,0,0,-10,126,126
  900ENVELOPE2,8,10,6,-1,0,0,255
,109,-1,0,-1,126,126
  910ENDPROC
  920DEFPROCPYRAMID.LOCAL Q,W,X,
Y
  9300=580:W=580
  940FORY=900TO300 STEP-100 FORX
=0 TO W STEP160:PROCBOX(X,Y) NEX
T:Q=Q-80 W=W+80 NEXT.ENDPROC
  950DEFPROCBOX(X,Y)
  960MOVEX,Y:PLOT1,-80,-50 PLOT1
,80,-50:PLOT1,80,50.PLOT1,-80,50
.PLOT0,80,-50:PLOT1,0,-50 PLOT1,
-80,-50.PLOT1,0,50.PLOT0,0,-50:P
LOT1,-80,50.PLOT1,0,50:ENDPROC
  970DEFPROCFILL(X,Y):IFPOINT(X+
60,Y-20)<>0 THENENDPROC
  980IFZ<1 THEN GCOL0,0 GOTO1000
  990GCOL0,3 FIL=FIL+1
 1000MOVEX+60,Y:PLOT1,-80,-50
 1010PLOT81,80,-50 PLOT1,80,50:P
LOT85,X+60,Y
 1020ENDPROC
 1030DEFFNCHECK(X,Y,F):IFY<300TH
EN.=-1 ELSE IF Y>900THEN:=-2
 10401FSH>1ANDSX=XX AND SY=YY TH
EN =-9
 1050IFBX=XX AND BY=YY THEN.=-9
 10601FF=1 IF(SX+X2=BX AND SY+Y2
=BY)OR(BX+X2=SX AND BY+Y2=SY)THE
N =0
 1070ON ((Y DIV 100)-2)GOTO1080,
1100,1120,1140,1160,1180,1200
 1080IFX<0 ORX >1150 THEN =0
 1090=1
 1100IFX<0 OR X>1079 THEN =0
 1110=1
 11201FX<50 OR X>999 THEN.=0
 1130=1
 1140IFX<121 OR X>919 THEN.=0
 1150=1
 11601FX<201 ORX>830THEN:=0
 1170=1
 11801FX<290 ORX>750THEN:=0
 1190=1
 1200IFX<370 ORX>670 THEN =0
 1210=1
 1220DEFPROCDIR(RAN,ZZ$,X1,Y1)
 1230D=RND(RAN).X2=0 Y2=0
 12401FD=1 X2=80.Y2=-100
 12501FD=2 X2=-80 Y2=-100
 12601FD=3 X2=-160
 1270IFD=4 X2=-80:Y2=100
 12801FD=5 X2=80 Y2=100
 1290IFD=6 X2=160
 1300Z1=FNCHECK(X1+X2,Y1+Y2,1)
 13101FZ1=0OR((Z1=-1ORZ1=-2) AND
RAN>2)THEN1230
 1320MOVEX1,Y1.PRINTZZ$
 1330X1=X1+X2:Y1=Y1+Y2.MOVEX1,Y1
PRINTZZ$
 13401FZ1=-1:MOVEX1,Y1 PRINTZZ$
X1=600:Y1=1000 MOVEX1,Y1 PRINTZZ
$ X1=600.Y1=1000.X2=0:Y2=0 BX=60
0.BY=1000
 1350ENDPROC
 1360DEFPROCFALL MOVEXX,YY:PRINT
Q$
 1370FORN=YY TO -10 STEP-100
 1380MOVEXX,N:PRINTQ$ FORG=1TO10
0.NEXT
 1390MOVEXX,N.PRINTQ$ NEXT.ENDPR
OC
 1400DEFPROCINSTR
 1410X3=10:Y3=1000
 1420RESTORE1550
 1430READA1$ IFA1$="END"THENZ=GE
T RESTORE ENDPROC
 14401FA1$="CLR"THENZ=GET CLS:X3
=10.Y3=1000.GOTO1430
 1450PROCJUMP GCOL0,3 MOVEX3+100
,Y3:PRINTA1$
 1460GOTO1430
 1470DEFPROCJUMP
 1480MOVEX3,Y3 PRINTQ$
 1490FORJ=1TO6 MOVEX3,Y3.PRINTQ$
.X3=X3+.25 Y3=Y3+5.MOVEX3,Y3.PR
INTQ$:NEXT
 1500MOVEX3,Y3:PRINTQ$
 1510FORY3=Y3 TO Y3-59 STEP-14
 1520MOVEX3,Y3 PRINTQ$.FORD=1TO1
00 NEXT MOVEX3,Y3.PRINTQ$ NEXT
 1530SOUND1,1,10,1
 1540ENDPROC
 1550DATA1.Guide Q*BILL around t
he pyramid,filling in the tops a
s you go.
 1560DATA,,.2.Watch out for the
ball which,decends slowly at fir
st.But speeds,up gradually.
 1570DATA,,,3.On the third scree
n a snake will,be introduced.Thi
s will not chase,you but will mo
ve all over the,pyramid.
 1580DATA,,,4.Do not try to jump
 off of the,pyramid as this will
 prove,fatal for Q*BILL.
 1590DATA,,CLR
 1600DATA5.On the fifth screen t
he ball will,start to move like
the snake.
 1610DATA,,,6.You have three liv
es and you,will get an extra lif
e,every six sheets.
 1620DATA,,,7.TO MOVE USE,,"
 Q\  /E","      A-  -D","      Z/
 \C",,,,"      PRESS A KEY TO STA
RT",,
 1630DATAEND
```

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Crash			
Android One			

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sinclair special 5

Inside... New Interface 2 and ROM cartridges! New Software!

TAKING NEW SOFTWARE IN NEW DIRECTIONS

You'll see that this issue of Sinclair Special devotes considerable space to software. Why, when we've so much to say about hardware and peripherals? Simply because at Sinclair we believe in supporting first class hardware with first-class software.

This month sees the start of a new commitment to education in our catalogue, both for adults and children. In the field of micro theory, we've programs like Beyond BASIC and Make-a-Chip which take you from the creation of simple ZX® assembler subsets to simulated circuit design projects.

There's Musicmaster to teach you music terminology, note values and composition.

And if you're keen to beat your Spectrum at chess (which can be hard), you'll certainly want to try Chess Tutor 1, the first program in a complete chess masterclass.

Coming soon...

In the pipeline are many new releases, some of which break completely new ground. LOGO and micro-PROLOG, for instance. They're fifth generation languages which will take you and your Spectrum closer than ever before to the creation and application of artificial intelligence.

A formal agreement between Sinclair and Macmillan Education has been announced, the first results of which will be published this autumn. These consist of five programs in a complete early reading course, plus the first four of a series of programs based on Macmillan's top selling Science Horizons Scheme. All programs are designed for use in schools or the home.

And with Blackboard software we're publishing six more home education programs for primary school children. Covering alphabet, spelling and punctuation, each of these programs is a true gem, unlike any other education software, and fascinating to run. Even for adults!

I believe that these new titles represent a major advance in educational software for the home.

New ROM software too!

You may well have heard news of ZX Interface 2 and ROM cartridge programs. You'll find full details of the interface and its software on the facing page (and there's an order form on the back page too!). These offer an instant games playing facility at unbeatable prices and expand the possibilities of using your Spectrum in yet another direction.

Alison Maguire

Alison Maguire
Applications Software Manager

SOFTWARE UPDATE

The latest cassette software for ZX® Computers

Chess Tutor 1
For 48K RAM Spectrum. £9.95.

Chess Tutor is a new way of learning all about chess – using your ZX Spectrum.

It starts from the beginning by teaching you about the chess pieces and the way they move – including castling, en passant, promotion, check, checkmate, stalemate and perpetual check.

Then it teaches you the basic tactics – pins, forks, double attacks and skewers.

There are over 120 exercises and over 200 questions for you to answer – with demonstrations and hints from your ZX Spectrum when you want them.

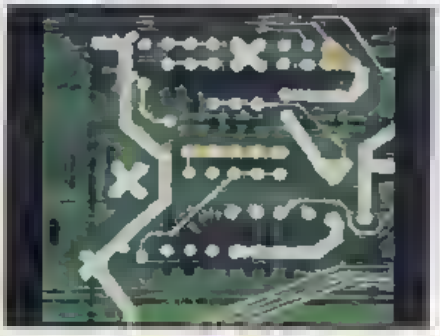
You can choose which parts of the course you want – and even experienced players may be surprised at what they can learn from Chess Tutor.

Musicmaster
For 48K RAM Spectrum. £9.95.

Musicmaster turns your ZX Spectrum into a musical instrument which will not only play tunes, but will also demonstrate key signatures, durations of notes, and scales.

You can write your own tunes – in any key – play them over and over again, save them on tape, modify them.

You can either write your music on a stave, or place a simple overlay on your Spectrum for a 17-note keyboard.



Make-a-Chip
For 48K RAM Spectrum. £9.95.

Make-a-Chip teaches you the basic elements of circuit design, shows you how they fit together, and then lets you design and test your own circuits.

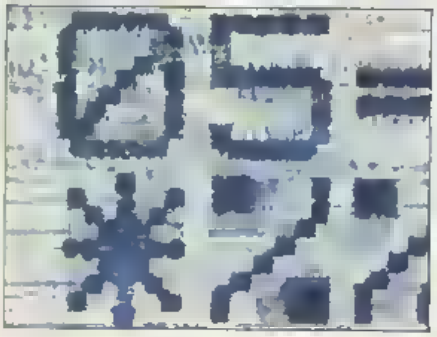
When you have designed a circuit, you can give it inputs and outputs and your ZX Spectrum will check it for you. Then it will run it, or tell you what's wrong so that you can modify it.

Make-a-Chip is a fascinating way of finding out how computer logic works.

Print Utilities
For 16K and 48K RAM Spectrum.
£9.95.

Increase the printing and display facilities of your ZX Spectrum with the Print Utilities program.

Print Utilities enables you to enhance your programs by generating characters of eight different sizes which you can place anywhere on your screen.



Beyond BASIC
For 48K RAM Spectrum. £9.95.

Takes the agony out of assembler. Takes the mystery out of machine code.

Beyond BASIC gives you a deeper insight into the workings of your ZX Spectrum. It explains what happens inside your micro when you run a program, and it teaches you simple Z80 machine code programming.

A major feature of Beyond BASIC is that it enables you to write your own Z80 assembler programs – then you can actually see on your screen how they affect the ZX Spectrum memory and registers.

ZX INTERFACE 2

The New ROM Cartridge/Joystick Interface

Loads programs instantly!
Takes two joysticks!
Just plug-in and play!

The ZX Interface 2 is the latest new peripheral for the ZX Spectrum® system. It enables you to use new ZX ROM cartridge software, plug-in programs that load instantly. It allows you to use two standerd joysticks, without the need for separate, special interfaces

To use new ZX ROM cartridge programs, just connect Interface 2 to the rear of your Spectrum or Interface 1 and plug in the cartridge of your choice. The program is then loaded, reedy to run!

You can use eny joystick that has a 9-wey D plug. Use one or two of them for extra fun with ZX ROM cartridge or Sinclair cassette programs – or with dozens of other Spectrum-competible programs!

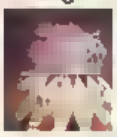
...AND BRAND NEW ROM CARTRIDGE SOFTWARE!

There's already plenty of choice of ZX ROM cartridge programs for your Spectrum. Some are old favountes, in an exciting new form. Others are new.

And now, thenks to ROM cartridge technology, you can run them *all* on e 16K RAM Spectrum, even if they were onginally written only for 48K machines!

Every ROM cartridge program loads fast and faultlessly No wires, no waiting, no worries about loading errors! All of them ere affordably priced too, at £14 95.

Backgammon



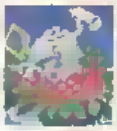
Everything you need to play the famous and deceptively simple board game Board stones, rolling dice and doubling dice ere shown in full colour and high resolution Choose from four levels of skill to suit experts and beginners alike – full rules are included

Space Raiders

Your skill is all 'hat s stopping successive waves of aliens from destroying Earth • Use your gun base to attack Shelter behind buildings move out and blast the passing alien spaceship'

Full colour high resolution graphics with sound

New! PSSST



Robbie the Robot sits in his garden Help him fetch compost to cultivate his prize Thyrgodian Megga Chrysanthodil Help him make the right choice of pesticide, to ward off devilish insects Stop the insects breeding to overwhelming numbers before Robbie's plant has bloomed PSSST is horticulture with a horrendous twist!

One and two player option with e host of features including sound effects

Chess

This sophisticated program does everything you'd expect al board game level, and much more besides

The high-resolution chessboard and pieces ere arranged in a row and column system, so it s easy to key in your moves

At eny stage of the game you can request the computer to suggest a move reverse roles or change the level of skill

Full-colour high resolution graphics

Planetoids

Dodge and swerve using your thrust button, turn on a planetoid fire! But beware – the alien ship moves fast to destroy you with cluster bombs And when it comes to the crunch, use your hyperspace button!

Full-colour high resolution graphics with sound

Hungry Horace

Horace is forever being chased around the park by guards

He steals their lunch eats pathway flowers and creates chaos in the park by ringing the alarm!

You'll have to be quick to keep Horace out of trouble!

Full-colour high-resolution graphics with sound

New! Trenz Am

Set in a future time ruled by cars and trophies in a land where petrol replaces gold, and status is possession of the 8 Great Cups of Ultimate

Driving your Super Blown Red Racer use your skill to outwit and crash the Deadly Black Turbos Use your instruments to locate and collect the trophies – before you overheat or run out of fuel

A program with outstanding multi-directional movement, graphic features, and a playing area equivalent to more than 600 times actual screen area

Horace and the Spiders

Guide Horace on the hazardous journey to the cobwebbed house full of poisonous spiders

Safely in the house you must move along cobwebs, choose a spot and jump on it! The spiders will be in a frenzy – scuttling to repair their precious web

And when a spider is spinning a new section, you're safe to attack and destroy it!

Kill all the spiders, and a new web appears with even more spiders to catch

Full-colour high-resolution graphics

New! Cookie

You're Charlie the Chef, who keeps his ingredients locked in the larder But if the ingredients escape They bring the inedible Nasties with them!

You must daze the escaping ingredients with flour bombs and knock them into the mixing bowl Stop them getting into the dustbin, at all costs! And beware of Nasties that get into the mixing bowl!

Cookie is fast moving panic in the pantry with a cast of real characters A program to make you smile – and sweat!

New! Jet Pac

As Chief Test Pilot of the Acme Interstellar Transport Company your task is to deliver and assemble spaceship kits On your way round the galaxy, you're free to collect precious stones and gold

The catch? Rocket fuel is precious and scarce And the aliens don't take kindly to the theft of their valuables You'll need your wits and your lasers!

With e host of features including multi directional movement explosions sound effects and one and two player option

ZX MICRODRIVE

NOW ON RELEASE

The ZX Microdrive* System – as you'd expect from Sinclair – is unique to the world of computing. It's a compact, expandable add-on system which provides high-speed access to massive data storage. With just one Microdrive alone (and Interface 1), you'll have at least 85K bytes of storage, the ability to LOAD and SAVE in mere seconds, the beginnings of a local area network of up to 64 Spectrums, *and* a built-in RS232 interface! The cost? Less than £50 for each Microdrive.

How to get ZX Microdrive

Spectrum owners who bought direct from us, by mail order, have been sent full details. Order forms are being mailed in strict rotation, so if you haven't yet received your order form please bear with us. We're making good progress in meeting the huge demand.

If you didn't buy your Spectrum by mail order, don't worry. Send us the form from the bottom of this page. We'll add your name to the mailing list, and send you details by return.

Each Microdrive costs £49.95. Interface 1 costs £49.95, but just £29.95 if purchased with a ZX Microdrive. Extra ZX Microdrive cartridges, £4.95.

How to order

Simply fill in the relevant sections on the order form below. Note that there is no postage or packing to pay on some purchases. Orders may be sent FREEPOST (no stamp needed). Credit card holders may order by phone, calling 01-200 0200, 24 hours a day. 14-day money-back option, of course. Please allow 28 days for delivery.

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ORDER FORM

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	Postage and packing: orders under £90	0028	2.95	
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G10/R	Chess	5301	14.95

	CASSETTE PROGRAMS for ZX Spectrum		
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L5/S	Print Utilities	4404	9.95
			TOTAL £

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Please add my name to the Microdrive Mailing List, *and* send me a colour brochure with full specifications of ZX Microdrive/Interface 1 *(tick here)*. You can use the above form to send us your name and address

BY STEPHEN PHIPPS

RUNS ON A ZX81 IN 1K

PATROL
SHIP

```
  9 LET D=INT VAL "RND*12"
 10 LET X=CODE "="
 11 LET E=SGN X+SGN X
 15 LET Z=D
 16 LET S=NOT Z
 20 LET Y=S
 21 LET B=Y
 22 LET A=Z
 70 PRINT AT A,B,"  ";AT X-E-S
GN E,D,"[illegible]";TAB D,"[illegible]";T
AB D;"[illegible]",TAB D;"[illegible]",TAB
 D;"[illegible]";AT Z,Y;"[illegible]"
 75 LET S=S+SGN X
 80 LET A=Z
 90 LET B=Y
 95 LET Z=Z+RND*E
100 LET Y=Y+(INKEY$="8" AND X>Y
)-(INKEY$="5" AND X-X<Y)
110 LET Z=Z-(INKEY$="7" AND Z>N
OT X)-RND
115 IF INT Z=X AND Y>D AND Y<D+
E+SGN D AND INKEY$="0" THEN GOTO
 VAL "200"
116 IF INKEY$="0" THEN GOTO VAL
 "110"
120 IF Z>=X+SGN X OR INT Z=X-E
AND Y<D+E+SGN X THEN PRINT AT A,
B;"[illegible]";U
130 GOTO VAL "70"
200 PRINT AT D,D;"[illegible]",,"
YOUR TIME=";S-D
```

The long patrol is almost over and you, pilot of a long range survey ship, are almost dozing off over your flight controls as your ship follows the automatic flight path back to your ship. But as you approach the mother-ship alarm bells shock you out of your relaxed mood. Turning on your scanners you see the mother-ship hovering on the edge of a Black Hole! The galactic winds whipped up by the Black Hole make it impossible for you to contact the mother-ship and tell them that you want to dock your craft. Then you discover another hazard. Your braking jets have malfunctioned. So you are going to have to attempt the docking manoeuvre without any help from the ship.

Although the limitations of a 1k program are great the author has attempted to make this game as challenging as possible without resorting to machine code.

You control the space ship using the curser control keys
5 — left
7 — up
8 — right
0 — hyperspace (to stop inside the mother ship)
I have deliberately limited the amount of control to make it harder.

Variables
D = random position of mother ship
X = variable assigned to save space because of the recurrence of the numeral 20
E = same as X but equal to 2
Z and Y = co ordinates of patrol ship
A and B = prints a space on the last values of Z and Y respectively, to erase the patrol ship
S = score
Z = simulates buffeting winds by randomly moving the ship up and down
U = undefined variable to halt the game at the end

Program notes

NOTE Remove all REM statements before attempting to run the game in 1K. If program should stop with error 4-OUT OF MEMORY then CONT will resume

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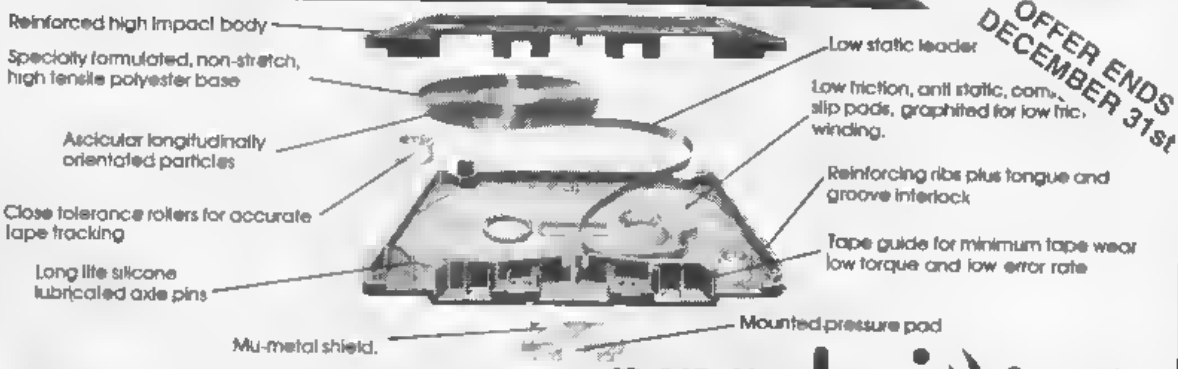

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```
   60ONERRORRUN
   70MODE 6.VDU 19,0,4,0,
   80PRINT'"     Do you want inst
ructions ?(Y/N)"
   90A$=GET$.IF A$="Y" PROC_INST
RUCT:ELSE IF A$<>"N" GOTO 90
  100CLS PRINT'"      What level
1-7 (Slow-Fast)":INPUT TAB(17,3)
LEVEL:IF LEVEL<1 OR LEVEL>7 THEN
 GOTO 100
  110MODE 2:VDU 23,1,0:0;0,0;
  120PROC_INIT
  130PROC_SCREEN:PROC_GAME
  140IF CR=1 THEN CLS:IF YES=1 T
HEN RESTORE:GOTO 70
  150IF CR=1 THEN CR=0 GOTO 130
  160PROC_WIN
  170COLOUR 7:COLOUR 128:CLS:RES
TORE 1720.GOTO 130
  180REM************************
***INIT
  190DEFPROC_INIT
  200FOR N=224 TO 239
  210READ A,B,C,D,E,F,G,H
  220VDU 23,N,A,B,C,D,E,F,G,H
  230NEXT N
  240DATA 0,0,24,102,219,255,126
,36
  250DATA 28,60,126,126,126,124,
60,0
  260DATA 32,7,103,242,242,100,6
5,0
  270DATA 7,31,63,127,127,255,20
7,207
  280DATA 224,248,252,254,254,25
5,243,243
  290DATA 204,252,252,126,63,7,0
,0
  300DATA 51,63,63,126,252,224,0
,0
  310DATA 60,255,255,189,231,165
,189,231
  320DATA 3,7,7,31,31,63,255,255
  330DATA 128,192,240,240,248,25
2,255,255
  340DATA 255,255,255,255,255,25
5,255,255
  350DATA 8,56,248,56,8,8,8,8
  360DATA 16,2,80,4,129,32,4,145
  370DATA 2,16,129,64,55,145,2,1
29
  380DATA 4,16,0,1,16,32,129,42
  390DATA 0,0,0,0,0,0,35,255
  400CR=0 SC=0.AST=15:ADD=0 SHIP
=0.LIVES=3
```

```
  410A$=CHR$129.YES=YES.IF YES=1
YES=0.GOTO 430
  420HI=0 DIM A$(6)
  430A$(1)=STRING$(4,A$+" ")+"
+A$+"      "+A$+"      "
  440A$(2)=A$+"    "+A$+"   "+A$+"
      "+A$+"   "+A$+" "
  450A$(3)=" "+A$+"   "+A$+"
"+A$+"   "+A$+"    "+A$+"   "
  460A$(4)=" "+A$+" "+A$+"    "+A
$+"   "+A$+"       "+A$+"      "
  470A$(5)=A$+"     "+A$+" "+A$+"
    "+A$+"    "+A$+"     "
  480A$(6)=A$+"   "+A$+"   "+A$+"
  "+A$+"    "+A$+" "+A$+"     "
  490FOR N=1 TO (LEVEL*2)+5 PROC
_ADD NEXT
  500ENVELOPE 1,1,-26,0,0,255,0,
0,127,0,0,0,126,0
  510ENVELOPE 2,1,0,0,0,0,0,0,12
6,-1,0,-5,126,0
  520ENVELOPE3,133,8,4,8,3,1,1,1
26,0,0,-10,126,0
  530ENDPROC
  540REM************************
*SCREEN
  550DEFPROC_SCREEN
  560X=9 Y=6.A=X B=Y
  570PPOC_STARS:PROC_PLANET PROC
_LANDSCAPE PROC_DISPLAY.PROC_AST
EROIDS PROC_MOTHER_SHIP ENDPROC
  580REM************************
DISPLAY
  590DEFPROC_DISPLAY
  600COLOUR 0.COLOUR 131
  610PRINT TAB(0,27),STRING$(60.
" ")
  620PRINT TAB(0,27)," SCORE.";S
C;TAB(12);"HI ";HI
  630PRINT TAB(0,28);" MEN:",LIV
```

Illustration: Tony Rogers

```
ES;TAB(8);CHR$(128);" ";SHIP.TAB
(13);"LEV.";LEVEL
  640ENDPROC
  650REM**********************
**STARS
  660DEFPROC_STARS FOR N=1 TO 10
0
  670C=RND(7).IF C=5 GOTO 670
  680GCOL 0,C.PLOT 69,RND(1280),
RND(924)+100.NEXT.ENDPROC
  690REM**********************
*PLANET
  700DEFPROC_PLANET
  710GCOL0,6:D=-1 MOVE 100,940+3
8.REPEAT.D=D+8.XADD=38*SIN(RAD(D
)) YADD=38*COS(RAD(D))
  720MOVE 100,940:PLOT 85,100+XA
DD,940+YADD.UNTILD>360
  730COLOUR 2:COLOUR 134.PRINTTA
B(1,2);CHR$(130)
  740ENDPROC
  750REM**********************MOTH
ER*SHIP
  760DEFPROC_MOTHER_SHIP
  770SOUND 1,1,100,-1:VDU 19,15,
6,0;.COLOUR 5.COLOUR 128.R=0
  780VDU 31,8,5,131,135,132
  790VDU 31,8,6,133,32,134
  800COLOUR 6:VDU 31,9,6,128
```

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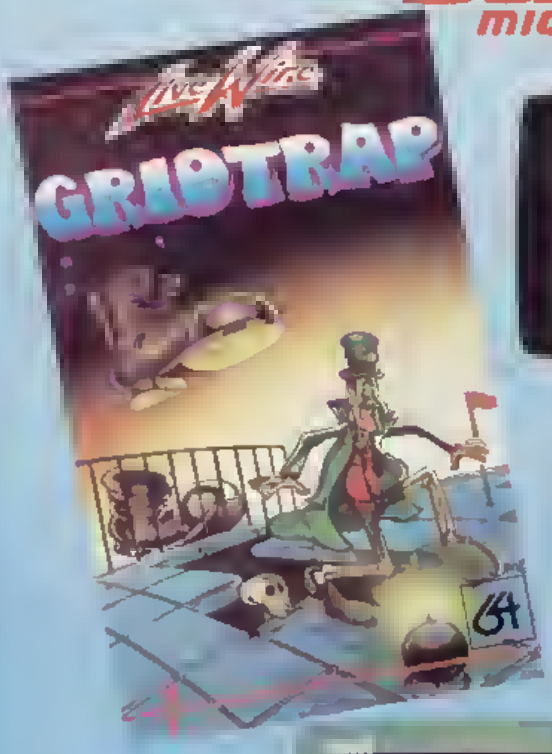

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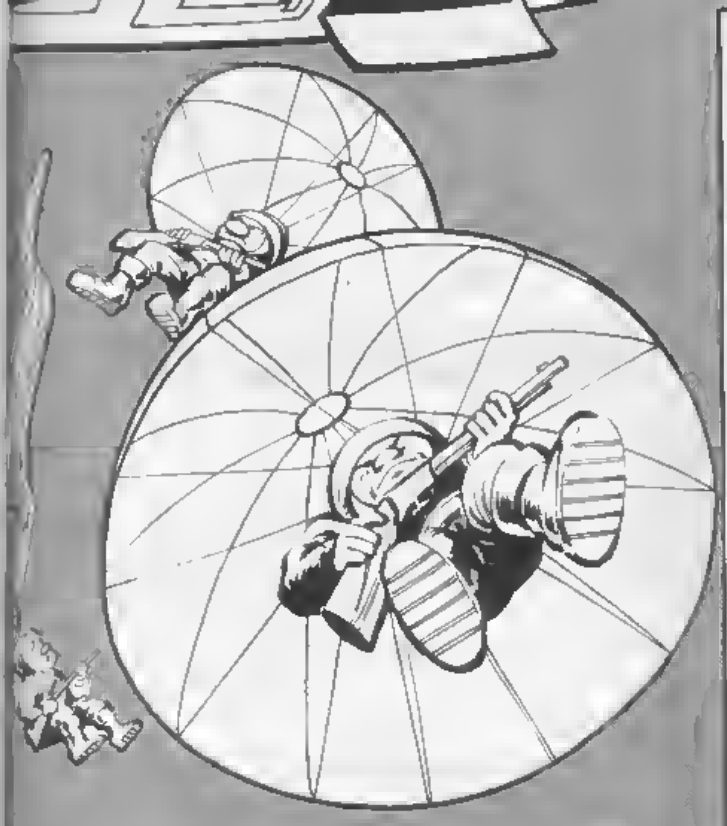

```
  810REPEAT:FOR N=1 TO 7:VDU 19,
5,N;0;:TIME=0:REPEAT:U
NTIL TIME>=10
  820NEXT:R=R+1:UNTIL R=6:VDU20
:VDU 19,15,6,0;:ENDPROC
  830REM**********INSTR
UCTIONS
  840DEFPROC_INSTRUCT
  850CLS:PRINT TAB(14);"*MOON RE
SKUE*"
  860PRINT:PRINT" The moon has b
een captured by PIRATES! They h
ave kidnapped FIVE important
 scientists.
            Your mission is to m
anouver your REMOTE CONTROL
 SPACESHIP (RCS) through the ";
  870PRINT"asteriod belt and tou
ch down on the landing pad posti
oned on a hilltop."
  880PRINT" The RCS contains par
atroopers who will try to recapt
ure the base."
  890PRINT" Drop as many ships
 as you can at various sites
 to gain points. The G
AME is OVER when 3 of your RCS's
  are destroyed!!"
  900PRINT'TAB(9);"Z.....
...LEFT":PRINT'TAB(9);"X.....
.....RIGHT"
  910PRINT'TAB(9);"RETURN.....
...THRUST"
  920PRINT'"    PRESS ANY KEY TO
 PLAY THE  GAME" W=GET:ENDPROC
  930REM**********LA
NDSCAPE
  940DEFPROC_LANDSCAPE
  950COLOUR128:COLOUR7:F=RND(13)
  960COLOUR3:PRINTTAB(0,25),"_",
STRING$(6,CHR$143);"_",CHR$143;"
__";STRING$(4,CHR$143);"____";CH
R$143,STRING$(20,CHR$138):COLOUR
 15 PRINTTAB(F+3,22),CHR$139:COLO
UR3 PRINTTAB(F+2,23);CHR$136:CHR
$138,CHR$137
  970PRINTTAB(F+1,24);CHR$136,ST
RING$(3,CHR$138),CHR$137,TAB(F,2
5),CHR$136,STRING$(5,CHR$138),CH
R$137 ENDPROC
  980REM**********
**GAME
  990DEFPROC_GAME
 1000SOUND 2,-15,100,5:PROC_PROM
PT
 1010*FX15,0
 1020PROC_SHIP PROC_PAUSE:PROC_L
ANDED IF L=1 THEN ENDPROC
 1030IF (Y>8 AND Y MOD2<>0)OR Y>
22  PROC_CHECK
 1040IF CR=1 PROC_CRASH:ENDPROC
 1050PROC_ASTEROIDS IF (Y>8 AND
Y MOD2<>0)OR Y>22  PROC_CHECK
 1060IF CR=1 PROC_CRASH:ENDPROC
 1070PROC_KEY:GOTO 1020
 1080REM**********
*PROMPT
 1090DEFPROC_PROMPT
 1100COLOUR 136:COLOUR 15
 1110PRINTTAB(0,0);"PRESS 'SHIFT
'  TO GO"
 1120IF INKEY(-1)=TRUE THEN COLO
UR 128 COLOUR 7:PRINT TAB(0,0);"
                ":ENDPROC
 1130PROC_ASTEROIDS:TIME=0:REPEA
T UNTIL TIME>=40:GOTO 1120
 1140REM**********
***SHIP
 1150DEFPROC_SHIP:COLOUR 128:PRI
NT TAB(A,B);" ":A=X:B=Y:COLOUR 6
:PRINT TAB(X,Y);" ":ENDPROC
 1160REM**********AS
TEROIDS
 1170DEFPROC_ASTEROIDS
 1180FOR Z=2 TO 6 STEP 2
 1190A$(Z)=RIGHT$(A$(Z),19)+LEFT
$(A$(Z),1):A$(Z-1)=RIGHT$(A$(Z-1
),1)+LEFT$(A$(Z-1),19) NEXT:COLO
UR 128:COLOUR 2
 1200FOR Z=1 TO 5 STEP 2
 1210PRINT TAB(0,(Z*2)+7);A$(Z):
NEXT
 1220FOR Z=2 TO 6 STEP 2
 1230PRINT TAB(0,(Z*2)+7);A$(Z)
NEXT
 1240ENDPROC
 1250REM**********
#LANDED
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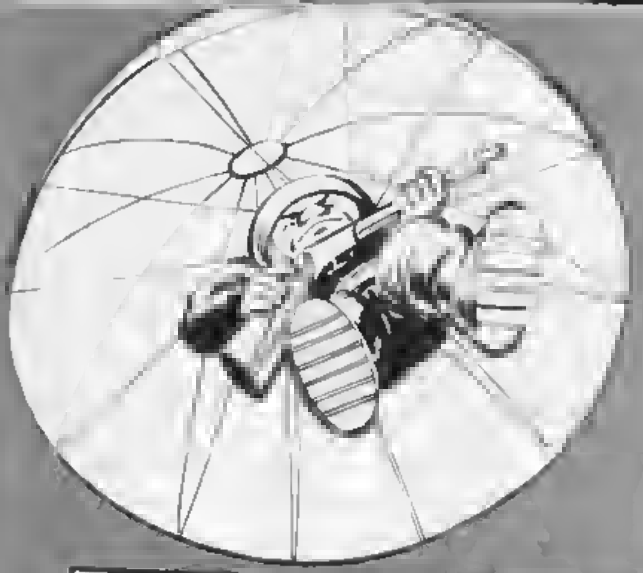
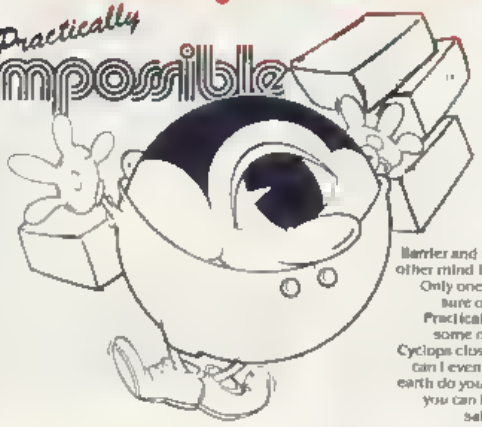
```
1260DEFPROC_LANDED:L=0 IF X=F+3
 AND Y=22 THEN L=1
 1270ENDPROC
 1280REM**********************
****KEY
 1290DEFPROC_KEY
 1300X=X-(INKEY(-67)=TRUE)+(INKE
Y(-98)=TRUE)
 1310IFX<2 X=X+1 ELSE IFX>18 X=X
-1
 1320Y=Y+(((INKEY(-74)=TRUE)*2)+
1)
 1330IFY<7ANDX<>9THENY=Y+1
 1340IFY<7 THEN Y=Y+1
 1350IF INKEY(-74)=TRUE THEN SOU
ND &0010,-10,5,11
 1360ENDPROC
 1370REM**********************
**CHECK
 1380DEFPROC_CHECK
 1390IF Y>20 GOTO 1410
 1400IF MID$((A$(Y DIV 2-3)),X
+1,1)=CHR$129 THEN CR=1
 1410IF Y<23 ENDPROC ELSE IF Y=2
5 OR (Y=23 AND ((X=F+4)OR(X=F+2)
)OR(Y=24 AND((X=F+1)OR(X=F+5)))
OR((X=F+3)AND(Y=23)) CR=1
 1420ENDPROC
 1430REM**********************
**CRASH
 1440DEFPROC_CRASH *FX15,0
 1450FOR N=15 TO 1 STEP -1:COLOU
R RND(3)+4
 1460PRINT TAB(X,Y),CHR$(RND(3)+
235)
 1470SOUND 0,-(N+RND(2)-RND(2)),
RND(2)+4,5
 1480TIME=0:REPEAT UNTIL TIME>=5
 NEXT:LET LIVES=LIVES-1:IF LIVES
=0 THEN PROC_GAME_OVER
 1490ENDPROC
 1500REM**********************
**PAUSE
 1510DEFPROC_PAUSE:IF LEVEL=15 E
NDPROC
 1520PAUSE=28-(LEVEL*4)-3:IF PAU
SE<0 THEN PAUSE=0
 1530TIME=0 REPEAT UNTIL TIME>=P
AUSE
 1540ENDPROC
 1550REM**********************GA
ME OVER
 1560DEFPROC_GAME_OVER
 1570SOUND 0,-15,7,5:FOR P=100 T
O 250:SOUND 1,1,P,1:NEXT P:*FX 1
5,0
 1580COLOUR7:PRINTTAB(5,16),"GAM
E  OVER"
 1590FORN=1 TO 3:SOUND 1,2,100+N
*10,10:FORM=1TO1000:NEXT,
 1600FOR N=1 TO 9000:NEXT
 1610IF SC>HI THEN PROC_HIGH
 1620PRINT TAB(4,16),"ANOTHER GO
?";TAB(7,18),"(Y/N)"
 1630I$=GET$
```



```
 1640IF I$="Y"THEN YES=1:ENDPROC
 ELSE IF I$="N"THEN END:ELSE GOT
O 1630
 1650REM**********************
***HIGH
 1660DEFPROC_HIGH:HI=SC
 1670COLOUR 7:PRINT TAB(0,12);"
  YOU HAVE TODAYS       HIGHEST S
CORE"
 1680FOR M=1 TO 8:FOR N=1 TO 7:V
DU 19,7,N,0,:TIME=0:REPEAT UNTIL
 TIME>=10 NEXT NEXT:ENDPROC
 1690REM**********************
****WIN
 1700DEFPROC_WIN:SOUND 1,3,130,7
:FOR N=1 TO 1500:NEXT FOR N=1 TO
 33
 1710READ Q,W:SOUND 1,2,W*7,Q NE
XT N
 1720DATA 4,9,4,5,4,5,8,5,4,9,4,
5,4,5,8,5,4,5,8,7,4,7,4,12,4,12,
8,9,4,5,8,5,8,5,4,5,8,7,4,7,4,12
,4,12,8,9,4,5,8,5,4,9,4,5,4,5,8,
5,4,9,4,5,4,5,8,5
 1730FOR N=1 TO 5000 NEXT:SHIP=S
HIP+1
 1740IF SHIP MOD 10=0 THEN ADD=5
 1750FOR N=1 TO LEVEL+ADD:LET SC
=SC+1
 1760COLOUR0:COLOUR131 PRINT TAB
(7,27);SC:SOUND 2,2,2,1:FOR Z=1
TO 200 NEXT,
 1770ADD=0:FOR N=1 TO 2000:NEXT
 1780LEVEL=LEVEL+1:IF LEVEL>7 TH
EN LEVEL=7 IF AST<>0 PROC_ADD:PR
OC_ADD
 1790IF AST<>0 PROC_ADD
 1800L=0:ENDPROC
 1810REM**********************
****ADD
 1820DEFPROC_ADD
 1830L=RND(6):P=RND(20)
 1840IF MID$(A$(L),P,1)=CHR$129
THEN GOTO 1830
 1850LET A$(L)=LEFT$(A$(L),P-1)+
CHR$129+RIGHT$(A$(L),20-(P+1)) E
NDPROC
```

The response from our first advert was so great that we just had to advertise some of our other games

Practically impossible



Can you steer your Silly Cyclops through the Barrier and then through five other mind boggling games? Only one thing you can be sure of. It's going to be Practically Impossible. In some of the games Silly Cyclops closes his eye so you can't even see him. How on earth do you help a guy when you can't see him? As I've said, it is Practically Impossible.

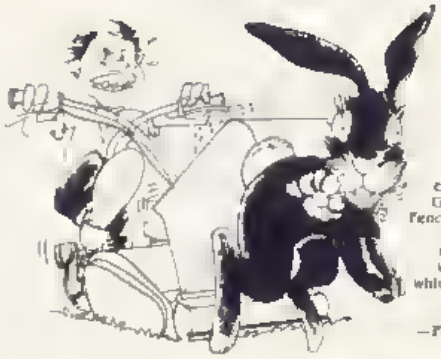
– For any ZX Spectrum

ALTAIR 4

– To avoid an asteroid storm your star-cruiser was forced to make an emergency landing on the planet Altair 4. You have to make some makeshift repairs before take off. Altair 4 is an inhospitable planet. It has no atmosphere and countless galactic travellers have met their fate here. One or two creatures inhabit the planet and they don't like humans ... except to eat.

– An adventure for the Commodore 64

mower mania



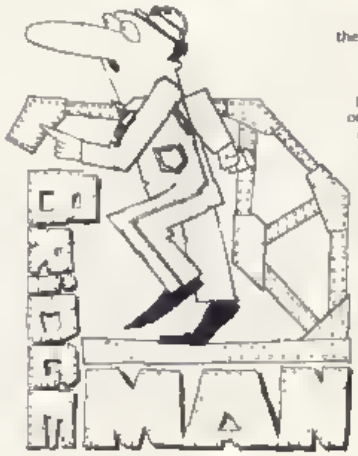
– You are employed by a miser millionaire as a gardener who only provides you with an old lawn mower on which the throttle has stuck open. You must try and mow the lawn avoiding crashing into the Gnomes, Garden Chairs, Tree, Pond, Fence and at all cost avoid the vegetable garden as the millionaire has sprayed it with a harmful insecticide which has had strange effects on the rabbits. Phew! What a job.

– For the VIC 8k Expanded

Now you can stretch your skills to the limit with this new computer version of the highly popular game Connect 4. Pit your wits and skill against the computer and simply connect four of your counters in a row, either vertically horizontally or diagonally did I say simply?

– For the Lynx

BRIDGEMAN



– You built the bridge and the responsibility is all yours. As bridges go it's not a bad job. Only one snag, due to a shortage of building materials there is only one section left and six gaps to fill. The Boss is on his way to inspect the job, can you juggle the single section around quickly enough so that he won't notice the gaps? It ain't going to be easy.

– For the Commodore VIC 20

MEGA VAULT

– Poor Fred! Locked away in the vault with no food ... can you help? Collect the food and make your way to the key and back to release poor Fred ... easy, but what about the guardians and traps that are lurking in the Mega Vault that are intent on stopping you.

– For the Commodore VIC 20

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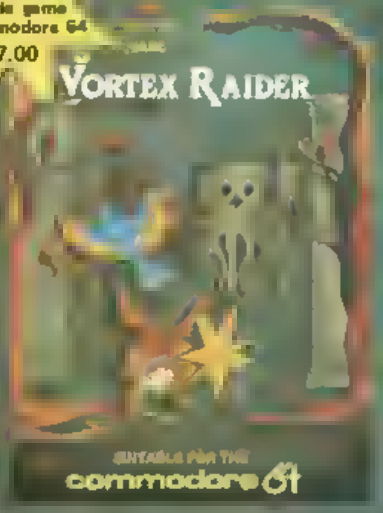

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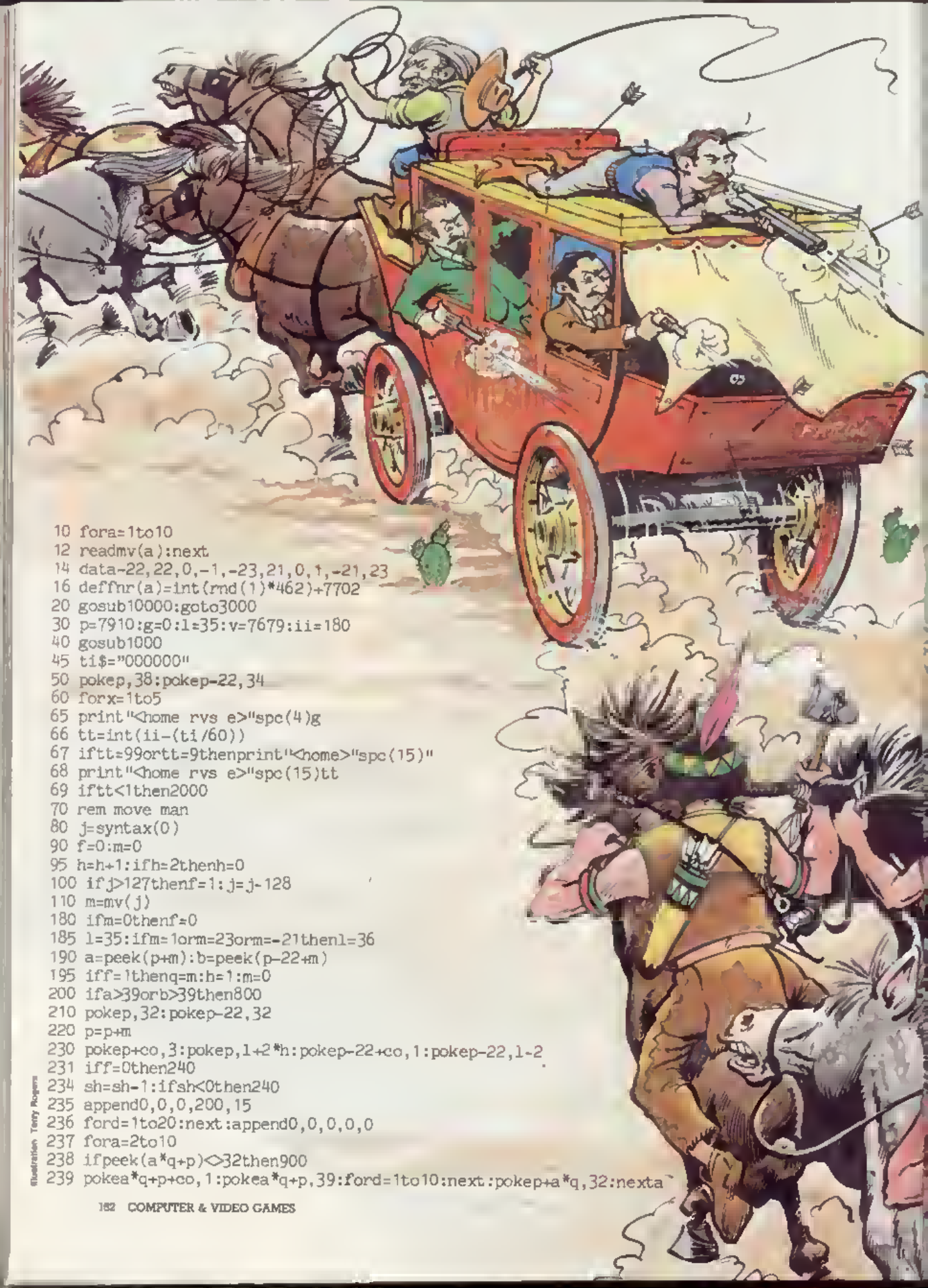

```
10 fora=1to10
12 readmv(a):next
14 data-22,22,0,-1,-23,21,0,1,-21,23
16 deffnr(a)=int(rnd(1)*462)+7702
20 gosub10000:goto3000
30 p=7910:g=0:l=35:v=7679:ii=180
40 gosub1000
45 ti$="000000"
50 pokep,38:pokep-22,34
60 forx=1to5
65 print"<home rvs e>"spc(4)g
66 tt=int(ii-(ti/60))
67 iftt=99ortt=9thenprint"<home>"spc(15)"
68 print"<home rvs e>"spc(15)tt
69 iftt<1then2000
70 rem move man
80 j=syntax(0)
90 f=0:m=0
95 h=h+1:ifh=2thenh=0
100 ifj>127thenf=1:j=j-128
110 m=mv(j)
180 ifm=0thenf=0
185 l=35:ifm=1orm=23orm=-21thenl=36
190 a=peek(p+m):b=peek(p-22+m)
195 iff=1thenq=m:h=1:m=0
200 ifa>39orb>39then800
210 pokep,32:pokep-22,32
220 p=p+m
230 pokep+co,3:pokep,1+2*h:pokep-22+co,1:pokep-22,1-2
231 iff=0then240
234 sh=sh-1:ifsh<0then240
235 append0,0,0,200,15
236 ford=1to20:next:append0,0,0,0,0
237 fora=2to10
238 ifpeek(a*q+p)<>32then900
239 pokea*q+p+co,1:pokea*q+p,39:ford=1to10:next:pokep+a*q,32:nexta
```

Illustration Terry Rogers

WILD WEST

```
240 rem move neemee
250 ifpeek(w(x)+d(x))<>32then700
260 pokew(x),32:w(x)=w(x)+d(x)
270 pokew(x)+co,3+4*h:pokew(x),44+rnd(1)*2
280 rem gold
290 ifn=1then360
300 n=1:pokev,32:sh=6
310 v=fnr(1)
320 ifpeek(v)<>32orabs(p-v)<88then310
330 pokev+co,7:pokev,43
340 append0,0,240,0,15:ford=1to10:next
350 append0,0,0,0,0
360 nextx
380 z=fnr(1)
390 ifpeek(z)<>32then60
400 pokez+co,5:pokez,41
410 goto60
700 rem neemee has hit
710 a=peek(w(x)+d(x))
720 ifa<39then2000
730 pokew(x),32
740 q=fnr(1)
750 ifpeek(q)<>32orabs(p-q)<88then740
760 w(x)=q
770 d(x)=(int(rnd(1)*3)-1)+22*(int(rnd(1)*3)-1)
```

Howdy pertuers! My neme le Chieholm Gulch, and I'm sheriff of this here township, Vicville. Right now, I'm on tha trail of some lost gold — but the nasty Neemee tribe are on the warpath and making my life somewhet difficult. Thet'e why I need your help. I need e posse to ride out with me to get the gold and fight off the injuns! How about it partners?

Well, if you decide to help the Sheriff of Vicville this is what you'll be up egainst. You have to move the Sheriff around the screen collecting gold nuggets. Additional pointe can be gained by ehooting Neemees who come after you.

The Sheriff is armed with e eix-ehooter which he can ehoot et Neemees or cecti with to clear e path to the gold. After he hae used up six ehots the Sheriff must pick up e nugget to get more ammunition.

Variables

p—players position
v—position of gold
li—time limit
w(x)—neemee's position
d(x)—neemee's direction
n—flag. Is gold on screen? n# n = 1:yes
sh—number of shots left in gun
co—30720, add to screen position to get colour position.
g—amount of gold held by player

```
780 ifd(x)=0then770
790 goto270
799 rem man hit
800 ifa=46orb=46thenm=0:goto230
810 ifa=43orb=43thenprint"<home rvs f>t0cde"
:g=g+10:n=0:goto210
820 ifa>43orb>43then2000
830 gosub9200:m=0:goto230
899 rem bullit hit
900 c=peek(a*q+p):r=a*q+p
910 forb=1to10
920 poker,40:append0,0,0,160,15:ford=1to10:next
930 poker,c:ford=1to10:next:append0,0,0,170,10:next
935 append0,0,0,0,0
940 ifc=43thengosub9100:n=0:pokev,32:goto240
950 ifc=46thengosub9100:goto240
960 ifc>43thengosub9100:g=g+10:goto990
970 ifc=41thenpokea*q+p,42:goto240
980 poker,32:goto240
990 forc=1to5:ifw(c)=rthenw(c)=7725:poker,32
991 nextc
995 goto240
1000 rem set screen
1010 print"<clr rvs e>gold+    <crsr rght>time"
1015 co=30720
1020 backup0,4,7,7
1030 fora=7702to7723
```

BY STEPHEN LANGSTAFF

RUNS ON A VIC 20 WITH SUPER-EXPANDER AND JOYSTICK IN 8.5K

IMAGIC ARE LIGHT YEARS AHEAD.

You are going to need all the light years you can muster if you are to conquer the latest mindwarping cartridges from Imagic.

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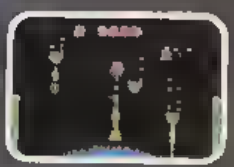
Fragments from an exploded sun shower your planet. Alien spacecraft bombard you. Pulverize them or your planet will overheat and blow up!



FATHOM
As a seagull, flap your wings and fly for shore. Touch the clouds and they'll disappear! But beware of blackbirds. Search the shoreline, but don't get seared by the volcanoes.

MOONSWEEPER
Miners are trapped on Jupiter's moons — U.S.S. Moonsweeper to the rescue! Meteors hurtle past. Choose a moon and land if you can — or dare.

QUICK STEP
Become a Kangaroo in this latest wild and wacky game. Bounce from trampoline to trampoline in pursuit of points, but you'd better hop to it.

LASER GATES
It's bad news. Computers have taken over the earth, you've got to stop them! Battle with their Lasers, zonk hurling aliens, and flying demons.

These cartridges will tie you in hyperspatial knots. Beam down to your local video game stockist and check out these exciting new titles but be warned, you could be playing from here to eternity.

IMAGIC

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Telephone: 0455 610770

```
1040 pokea,46:pokea+co,10
1050 pokea+462,46:pokea+co+462,10
1060 next
1070 fora=7702to8164step22
1080 pokea.46:pokea+co,10
1090 pokea+21,46:pokea+co+21,10
1100 nexta
1110 fora=1to20
1120 x=fnr(1)
1130 ifpeek(x)<>32then1120
1140 pokex,41:pokex+co,5
1150 nexta
1160 fora=1to5
1180 x=fnr(1)
1190 ifpeek(x)<>32orabs(p-x)<66then1180
1200 pokex,44:pokex+co,7
1210 w(a)=x
1220 d(a)=(int(rnd(1)*3)-1)+22*(int(rnd(1)*3)-1)
1230 ifd(a)=0then1220
1240 nexta
1250 rem move man in
1300 forx=7901top
1310 a=peek(x):b=peek(x-22)
1320 pokex,38+2*(int(x/2)*2=x):pokex+co,5
1330 pokex-22,34:pokex-22+co,5
1340 fory=15to0step-1
1350 append200,0,0,200,y
1360 nexty
1365 ford=1to100:next
1370 pokex,a:pokex-22,b:nextx
1380 return
2000 pokep,32:pokep-22,32
2002 fora=1to50
2004 backup0,6,1,7
2006 backup0,5,1,7
2010 nexta
2015 print"Game over"
2020 poke7927,38:poke7905,34
2030 poke7937,37:poke7915,33
2035 gosub9100:ford=1to500:next
2040 forb=7928to7936
2050 pokeb,39:ford=1to80:next:pokeb,32:next
2055 tn=0
2060 forx=7915to8157step22:pokex,44:pokex+co,7
:append240+tn,240+tn,0,0,15
2062 ford=1to100:next:append0,0,0,0,0:pokex,32
:tn=tn+1:nextx
2070 print"<rvs f>t2s2ars3drs2ars3drs2t7at6fgt7dt6r"
2075 print"<rvs f>t2s2ars3drs2ars3drs2t7at6fgrs3c"
2080 ford=1to2000:next
2090 print"<rvs e 2crsr down>))press fire to play))"
2100 ifsyntax(0)<128then2100
2105 n=0
3000 backup5,5,0,2:print"<clr>"
3010 print"<2 crsr down>)))))wild west)))))"
3020 print"<crsr down>you are the sheriff of"
3030 print" peaceville"
3040 print"<crsr down> a small town plagued "
3050 print" by neemees - - - - -"
3055 ford=1to1000:next
3060 print"<2 crsr down>press fire to continue"
3070 ifsyntax(0)<128then3070
3080 print"<clr 2 crsr down>you are controling"
3090 print"<crsr down>the character !<crsr down
crsr left>£"
3100 print"<2crsr down>  do not sit on the "
3110 print"<down>)c a c t u s)"
3120 print"<crsr down>      plant"
3130 print"<crsr down>  it does hurt"
3135 ford=1to1000:next
3140 print"<2 crsr down>   press fire
to play"
3150 ifsyntax(0)<128then3150
3160 goto30
9000 rem sounds
9099 rem ricochette
9100 fora=15to1step-.7
9110 append0,0,a+235,a+235,a
9120 nexta
9130 ford=1to40:next
9140 append0,0,0,0,0
9160 return
9199 rem ouch
9200 print"<home>"spc(15)"ouch)"
9201 backup0,7,1,5
9202 fora=15to0step-.5
9210 append0,240,237,0,a
9220 nexta
9225 ii=ii-1
9230 append0,0,0,0,0
9231 backup0,4,1,7
9235 print"<home>"spc(15)"      "
9240 return
10000 rem set graphics
10010 poke52,29:poke56,29
10020 poke51,0:poke55,0
10030 fora=0to511
10040 pokea+7168,peek(a+34816)
10050 nexta
10060 forb=0to111
10070 readd
10080 pokeb+7432,d:next
10090 poke36869,255
10095 return
10100 data0,14,31,54,30,2,14,4
10110 data0,112,248,108,120,64,112,32
10120 data127,13,13,12,18,161,67,0
10130 data254,176,176,48,72,133,194,0
10140 data239,61,13,15,28,23,49,0
10150 data247,188,176,240,56,232,140,0
10160 data24,24,0,0,0,0,0,0
10170 data153,90,36,195,195,36,90,153
10180 data0,8,42,42,46,56,8,8
10190 data0,0,0,0,46,56,8,8
10200 data0,48,62,126,254,248,240,112
10210 data60,126,222,126,14,60,20,54
10220 data60,126,123,126,112,60,40,108
10230 data170,190,150,170,150,170,190,170
```

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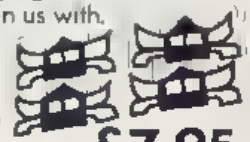

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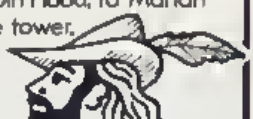

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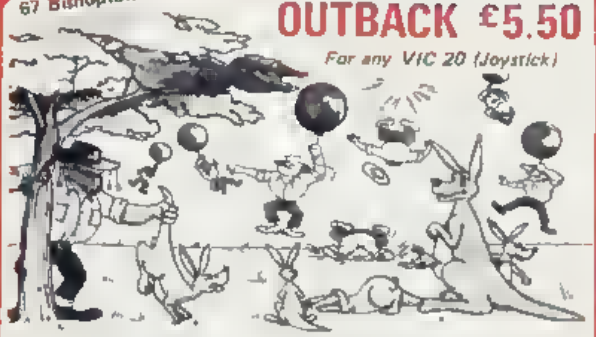

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BY MICHAEL RICHARDSON

GUNNER

RUNS ON A DRAGON IN 32K

```
70 T=1
80 CLS
90 GOTO 110
100 CLS:PRINT"YOU MISSED AGAIN!!!YOU SHOULD  BE COURTMARTIALED!!AND ALSO THE WI
ND WAS CHANGED!!"
105 SCREEN 0,1
110 X=RND(100)
120 PLAY"T25;A0FCBAA0GF0A"
130 PRINT"THE WIND IS TRAVELLING AT";X;"KM PER HOUR WITH YOU."
140 PRINT:INPUT"NOW MUCH GUNPOWDER TO USE(1 KG  TO 100 KG) AND  THE ELEVATION OF
 THE GUN OF 30  TO 90 DEGREES  ";P,E
150 IF E<30 OR E>90  THEN 140 ELSE 160
160 IF P<1 OR P>100 THEN 140
170 GOTO 200
180 CLS:PRINT"YOU MISSED!!! YOU WILL HAVE TO  TRY AGAIN!":GOTO 120
190 GOTO 130
200 PMODE 3,1:SCREEN 1,0:PCLS3
210 LINE(0,190)-(255,190),PSET
220 CIRCLE(30,40),20,,1,0,1
230 PAINT(30,50),2,4
240 LINE(100,190)-(104,180),PSET,BF:CIRCLE(102,175),10,,1,0,1
250 LINE(120,190)-(124,180),PSET,BF:CIRCLE(122,175),10,,1,0,1
260 LINE(140,190)-(144,180),PSET,BF:CIRCLE(142,175),10,,1,0,1
270 LINE(160,190)-(164,180),PSET,BF:CIRCLE(162,175),10,,1,0,1
```

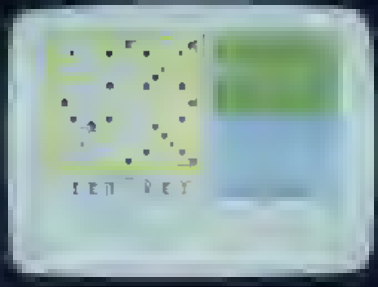
The enemy convoy is approaching along the only road left open after your troops took control of all the bridges. Your job is to stop that convoy reaching its destination. You are in command of a field gun hidden behind some trees. You must judge the speed and distance of the approaching convoy and fire at it — aiming to cause as much destruction as possible. But it's not as easy as it sounds. You have to take into account the speed and distance of the approaching convoy. And there is a tricky wind blowing which could throw all your calculations out by a mile — literally! You have to judge how much powder to use and the elevation of the gun before blasting away at the enemy. Can you stop the convoy?

Program notes:
Lines 110: wind. 150-160: errors. 200-350: sets up screen. 330-370: hit or not.

```
200 PRINT(102,175),1,4:PRINT(122,175),1,4:PRINT(142,175),1,4:PRINT(162,175),1,4
290 DRAW"BM32,190;U5;R5;E7;F3;G4;R2;D5;"
300 PRINT(30,106),2,4
310 DRAW"BM215,190;BU2;U5;R4;U3;R10;D8;L2;D3;L2;U3;L6;D3;L2;U3;L2;"
320 PRINT(217,187),2,4
330 Z=E/100
340 Q=((P+(X/2))/Z)
350 CIRCLE(36+Q,190),Q,,Z,.5,1
360 W=92-Q
365 SOUND 34,10
370 IF W>-4 AND W<4 THEN GOTO 400 ELSE380
380 IF T>25 THEN GOTO 480
390 FOR C=1 TO 1000:NEXT:T=T+1:IF T>10 AND T<12 THEN GOTO 100 ELSE GOTO 180
400 PLAY"O1V31T2L4GGL8GGL4B-AAGGF+G"
410 FOR W=1 TO 500 :NEXT
420 CLS:PLAY "T0V3104GL3CO3CDDFCCFDECCO4GL3C":PRINT"WELL DONE,YOU HIT THE ENEMY
    CONVOY IN";T;"SHOTS"
430 PRINT"DO YOU WANT ANOTHER GO(Y/N)?"
435 SCREEN 0,1
440 A$=INKEY$
450 IF A$="Y" THEN 10
460 IF A$="N" THEN 470 ELSE 440
470 END
480 CLS:PRINT"YOU HAVE RUN OUT OF AMMUNITION YOU FOOL!!!":GOTO 430
```

Illustration: Terry Rogers

***Problem.** Simulating an aircraft on a small microcomputer and depicting the 3-D world outside through the eyes of the pilot.*

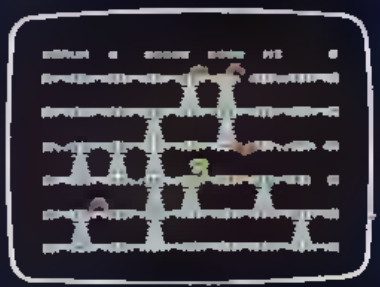


***Problem.** Turning the Spectrum's numerical abilities into powerful verbal skills combined with a huge vocabulary.*

PSION HAVE BIG PROBLEMS.

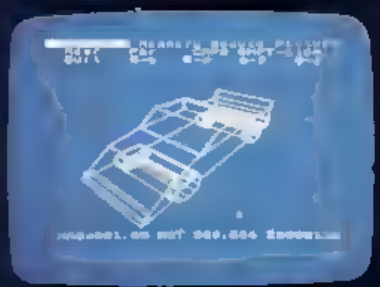
***Problem.** Evaluating complex algorithms to provide sufficient depth of analysis in a short time.*

***Problem.** Integrating cartoon-quality graphics with the realism of the ski-slope.*

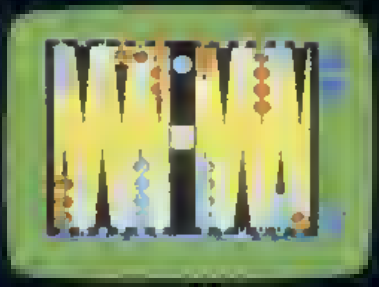


***Problem.** Creating cartoon-quality graphics in an entertaining and varied game.*

***Problem.** Providing complex, sophisticated data handling through easy-to-use commands.*



***Problem.** Modelling in 3-D on a small micro – performing some 7.5 million calculations for one hidden line drawing.*



***Problem.** Balancing the number of strategic factors required with a complex series of rules for a classic game.*

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- Horace and The Spiders
- Horace Goes Skiing
- Backgammon
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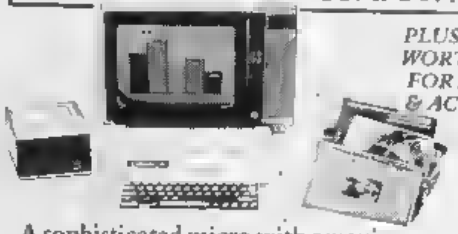

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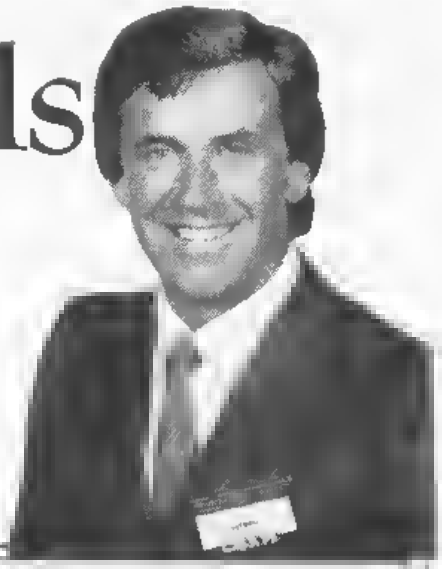

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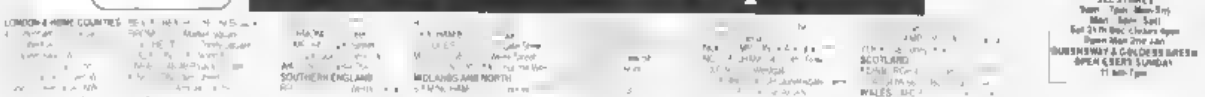

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PROGRAM EXTRA

This issue sees the start of a brand new feature devoted to helping you get more out of the games listings in *Computer and Video Games*.

Program Extra is going to bring you the inside story on what makes the games in *C&VG* that little bit better than the rest and hopefully help you write great games programs of your own.

The aim of Program Extra is to show the innovative and original ideas our programmers have used to create their stunning arcade style games.

We don't want Program Extra to be a one sided affair, so we're offering £10 for any tips or short programs that you think might put that extra added ingredient into your fellow readers' programs.

The first game to come under the scrutiny of our Program Extra supremo, Seamus St John, is Andrew Brown's excellent version of the arcade hit Q*Bert for the BBC model B computer.

You might have imagined that Q*Bert took Andrew many weeks to perfect, but nothing could be further from the truth. The game took only two days to complete.

One of the main problems that Andrew had to overcome was being able to move Q*Bert across the pyramid without actually rubbing it out.

He solved this by employing the VDU5 command, which appears to allow you to have to have objects in the foreground and the background. In this particular case the character Q*Bert is in the foreground bouncing across the surface of the pyramid in the background.

The VDU5 command also lets you create multi coloured shapes by superimposing defined characters on top of each other

Andrew got the idea for the game while playing Q*Bert in a local arcade. That evening he went home and designed the pyramid in what he called an "exercise in programming", and by the end of the next day the game was finished.

Budding BBC programmers can learn a lot from Andrew's game. He uses a very structured style of writing and his program includes quite a few "magic" tricks

One of these is clever use of the GCOL statement to produce smooth and very fast animation. This method of animation is difficult to use, you'll need to study the Q*Bert listing and the BBC manual to grasp it but I can assure you it's worth the effort.

One thing the author said he would change if he had the chance is the keyboard scanning routine. Instead of using INKEY$(0) Andrew would change to INKEY-(required number) this would give the game improved keyboard response. Why not try it out when you type in the listing?

The author of our Sharp program, Cyborg, is an old hand at writing games. Craig Shorland has already had several of his earlier efforts published. Craig reckons that the best way to write a program is to get as far away from your computer as possible! Old fashioned pen and paper are what he turns to when he begins to develop a new game.

Drawing up a flow chart — a kind of shopping list and computer map rolled into one — is an invaluable aid when writing concise, uncluttered programs.

Flow charts also give you a permanent record of what you plan to do once you forget or go a little off track

Craig says that anyone can write a good game program. All you need to do is take a little time and care to plan the program in advance.

In next month's issue *Computer and Video Games* will be printing a game for the Spectrum which we think rates as one of the best we've ever published. Mark White's Demolition is easily up to the standards of most commercial software. Program Extra will hopefully reveal a few of Mark's secrets!

And remember *Computer and Video Games* is always on the lookout for new and original games. From next issue we'll be paying £25 to the designer of the program we decide is *C&VG*'s Game of the Month. Each Game of the Month will get special treatment — including an interview with the designer in Program Extra. So get programming!

That about wraps it up for this month. Except to say that if you have any difficulty understanding how any of *C&VG*'s listings work, or would like to know how to use parts of the programs in your own games then please don't hesitate to write in.

We're not quite sure whether the World's ready for these games . . . but we've released them just the same.

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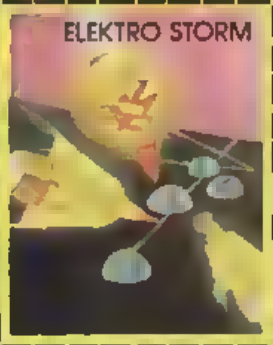
Voyager S[illegible]ware, Business Centre, Claughton Ro[illegible] Birkenhea[illegible] Merseyside, L41 6ES. Telephone: 051-[illegible]7 8618.

Arcade Action for Spectrum and ZX81 16K,48K



ELEKTRO STORM

Earth is under attack from wave after wave of intergalactic missiles – your mission is to blast them out of the sky with your laser cannon before the whole human race is wiped out.

SPECTRUM 48K 5·95

HOPPER

Help FERGUS and his friends across the highway avoiding the traffic, and then over the treacherous river on the backs of turtles and logs to the safety of the lilly pond.

Features include: 6 lanes of traffic, diving turtles, crocodiles & flies.

ZX81 16K 3·95
SPECTRUM
16K 48K 5·95

LIGHT CYCLE

The MASTER CONTROL PROGRAM has ordered you to race your light cycle on the infamous grid. This is an incredibly fast, adrenalin pumping game that is very addictive. There is an option to race against either another player or the computer – but are warn you its very very good!

SPECTRUM
16K 48K 5·95

MAZE DEATH RACE

Drive your 600b.h.p. racing car around a giant maze (9 times the size of the TV screen on the ZX81 version, 32 times for the spectrum). Watch out for the hazards – oil, ice, fallen rocks etc. Not the least of your worries are the chasing cars also in the maze – one touch with these means instant death!

ZX81 16K 3·95
SPECTRUM 48K 4·95

PANIC

"It must be a nightmare" he screamed as he ran around the maze of floors, desperately climbing ladders to different levels in a vain attempt to evade the monsters.

He had only his neutron hammer to dig holes for the vile creatures to fall into, but even then he had to repeatedly hit them before they dropped to their deaths. As if that wasn't bad enough, the oxygen supply was running out!

SPECTRUM 48K 5·95

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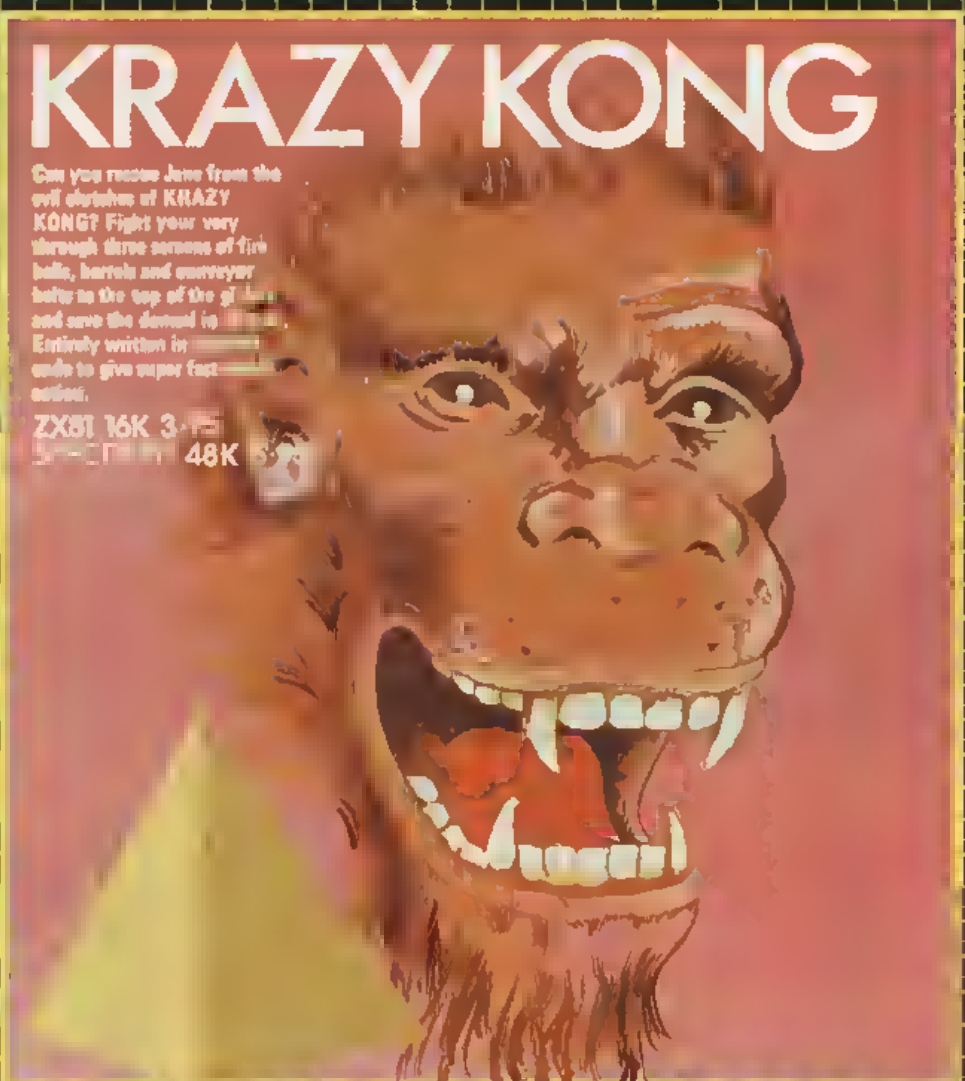
Can you rescue Jane from the evil clutches of KRAZY KONG? Fight your way through three screens of fire balls, barrels and conveyer belts to the top of the gi[illegible] and save the damsel in [illegible]. Entirely written in [illegible] code to give super fast [illegible] action.

ZX81 16K 3·[illegible]
[illegible] 48K [illegible]



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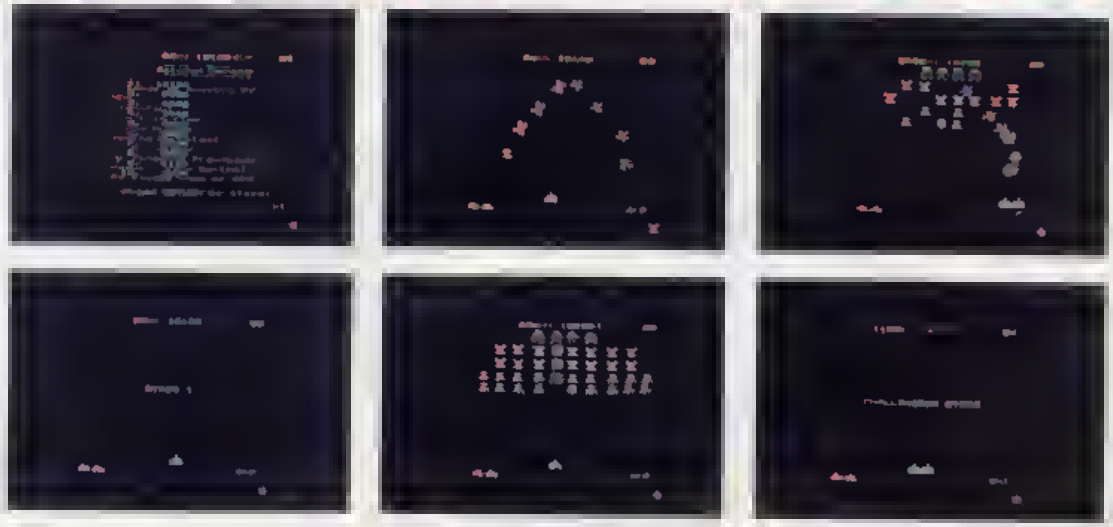
ORLANDO'S BACK!

ZALAGA

Aardvark Software, creators of the Ultimate Atom Games, bring you NOW

THE ULTIMATE BBC SPACE-GAME



Seated at your computer, streams of multi-coloured aliens swirl past your base into formation. The first squadron appears harmless, but later waves will avenge the deaths of their comrades with increasing ferocity. To combat the swooping bomb dropping meanies, you may try to link up a pair of laser-bases and **double your fire power!** Your progress through successive phases will be rewarded by challenge stages, where large bonuses may be earned. The game builds up to a dizzying crescendo of high speed motion where instant reflexes and pure technique are your only hope of survival. . .

One or two player game • Keyboard or joystick • Sound on or off • Escape facility • Works on all OS's and Tubes • Ten name Hi-score table • Mode 2 full colour graphics • Continuous rolling twinkling stars • Multiple missiles • Full screen action • Attractively packaged in a collectable library case • High quality cassette • Full instructions • For BBC model B or A + 32K •

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Aardvark Software,
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HORNCHURCH, Essex.

FRAK coming soon . . .

AT LAST, A HOME COMPUTER THAT IMPROVES WITH AGE.

It's surprising how many first-time relationships with a home computer go sour with age.

You buy an attractive, discounted little machine so that you and the children can learn about computers.

Instead you learn about its limitations: the dull graphics. The plugs that fall out. The cheap power supply. The unalterable "beginners" language. The stiff, fragile keys. No provision for future development. It only you'd looked around a bit in the beginning.

"Quality costs a little more, but it's usually worth paying for." (Personal Computer News CGL M5 Review, June 83.)

The CGL M5 is designed and built by Sord, one of Japan's leading computer specialists with three main ideas in mind.

First to be easy and fun to learn and operate.

Second to be rugged enough to last through hours and hours of operation.

And third, to form the basis of a powerful, versatile home computer system that won't need replacing until you're ready for a dedicated business system.

Built to learn

The CGL M5 is designed to be easy for non-geniuses to use.

"On the M5, most of the work is done for you and all that is left is the need to work out what truly next rather than how to do it." (Personal Computer News, June 83.)

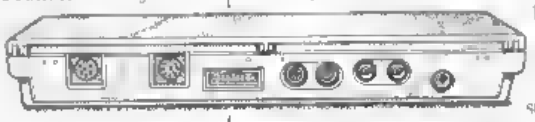
If you make a mistake, you can correct it with a simple movement of the cursor. So you only correct that mistake, not a whole line, nor do you have to indulge in complex edit commands.

Budding video game designers and computer artists will love to get their hands on the 16 colour graphics and 32 moveable images called "sprites."

"The M5 makes professional graphic effects very simple for even the beginner to achieve." (Personal Computer World, Aug. 83.)

Built to last

"It works first time, doesn't need a lot of mollycoddling and jiggery-pokery to persuade it to continue to do so, and what's even better, it continues to work well. You don't have to balance cold cartons of milk on the top, shove matches in the back to keep the plugs in, or press the keys with several pounds force to make them respond." (Personal Computer News, June 83.)



Being able to build things that work and carry on working without endless maintenance is something at which the Japanese seem to excel.

Built to grow

To be truly versatile, a home computer has to understand very different things.

So you need different "languages," which the M5 provides by supplying part of its memory in plug in cartridges.

"The M5 eliminates the worst limitations on machines at this level, which is that they tend to be stuck with a between language is provided by the management." (Personal Computer News, June 83.)

The computer is supplied complete with a Basic-T cartridge, a standard integer BASIC language and a simple learning text.

Plug in the Basic-G cartridge, and you can access the M5's incredibly sophisticated graphic and sound capabilities which are far in advance of similarly-priced computers.

Move on to the Basic-F cartridge, and you have scientific, technological and statistical computing power usually available only on big computers with equally big price tags.

The FALC cartridge provides a tailor made language for data management, spreadsheet accounts and business problems. Combine FALC with a disc and you could "turn the M5 into a small business machine." (Personal Computer Magazine, August 83.)

Now, take a look at the back of the M5. Notice the sockets (usually an extra) for a standard Centronics-type printer, the separate video monitor and hi-fi sound output.

Even the language cartridge socket has hidden potential.

"Unlike most such sockets, this one has 56 internal lines connected to it giving access to just about every function in the computer. This means that just about everything you can think of can be added into the computer, ranging from a Prestel interface to second processor to use as an intelligent terminal on a timesharing computer." (Electronics – The Maplin Magazine, March 83.)

Take a look at the home computer that will improve with age.

For a full technical specification of the CGL M5 details of the wide range of supporting software and to find out where to see a complete demonstration, send the coupon to:
CGL, CGL House, Goldings Hill, Loughton, Essex IG10 2RR. Telephone number: 01-508 5600.

I'd like to know more about the CGL M5. Please send me a brochure and a list of dealers.

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THE FABULOUS WANDA AND THE SECRET OF LIFE THE UNIVERSE AND EVERYTHING
for COMMODORE 64

An adult fantasy game with Arcade Action

You are travelling far from home looking for good times around the Universe when you are intercepted by the evil Brutus of the Federation. Brutus forces you to go and seek the Secret of Life the Universe and Everything known only to the Fabulous Wanda a hostess in the Spaced Out Inn in Highaville on the planet COPUS. You are teleported down to Highaville where the Customerman demands money for Teleport Tax. There is a video game in the Terminal with 3 credits left.
Now you are on your own and you must decide how to proceed to Highaville Mainstreet to find the various establishments to enter and

OGLES for BBC/B

Designed with people of all ages in mind this programme provides an aid to learn and match colours as well as being very entertaining. Not only have colours to be matched in sequence but co-ordination skills can be developed by moving the correct coloured OGLE to match a pattern displayed on the screen. Interest and amusement are provided by you as Gordon having to control your pet dog Flash by guiding him to collect the matching OGLE carry it back and to drop it at the correct position.
There are two levels of play.
An easy level for the younger person.
A professional level for the older person with play again and the all time and Hall of Fame.
OGLE COMPETITIONS ARE FUN! £8.95

BARRELDROP! *for 48K SPECTRUM*

Poor Gordon! His drainpipes are blocked again and the only way to clear them is to drop barrels down them. Gordon stands on the top of the roof with 5 barrels. When the game starts he will roll one down the roof. Press ***SPACE*** to drop it through the roof accurately into the centre of a drainpipe and you'll score the number of points in the pipe which will start to flash and Gordon will get the barrel back for another go. The barrel will be lost if the drop is inaccurate or into a pipe already filled but Flash the dog is on hand! If you know you're going to lose the barrel end you can see Flash peeping out from the bottom right corner pressed and Flash will save it! Once you clean all 5 pipes, you will get a bonus but there's a surprise in store before you get the next set of pipes to fill. £6.95

SUPERSNAILS for 16K or 48K SPECTRUM

Snails especially imported from West Africa are being kept in Dr. Van Winkelhoff's laboratory for genetic experiments. The Doctor has turned them into a super breed of snail who now leave behind a trail of super glue that will trap any snail touching it. Two of the snails continually moving and controlled by the players escape from their pens into the laboratory. Unfortunately only one of the snails can escape from there into the outside world without raising the alarm. You must therefore trap your opponent and then try to escape through the small door which will then appear.

Features
* Fast Action 100% Machine Code
* Nine levels of difficulty
* Keyboard or Joystick Control

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EGBERT
for COMMODORE 64

A fast Arcade Action Game for all the family to play. Written in 100% Machine Code for super fast action! Egbert works on the production line at LEYSPACE. It was a comfortable life until the invasion of the TEBBITES from the planet TOR. Egbert's union has been exterminated and the Tabbites have left their deadly Pets running wild in the workplace. As if that wasn't enough the evil Tabbites have forced Egbert to take care of an Egg damaging the Egg will have fatal consequences for poor Egbert. Egbert is now on piecework can he earn a decent wage? Can he even survive? **WARNING!** You may get an ulcer by playing this game.

SIX LEVELS OF SKILL ***ANYBODY WHO CAN DO LEVEL 6 SHOULD WRITE AND LET US KNOW!***

ARITHMETIC FUN-TIME for TI99

Elementary addition subtraction multiplication and division exercises providing valuable practice and drill for young children who are developing their basic mathematical skills.
Uses colour graphics and sounds to give a good presentation with the sums appearing in large letters on a blackboard.
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Write to me at Bug Hunter, Computer and Video Games, Durrant House, 8 Herbal Hill, London EC1R 5EJ. Or 'phone me on 01-278 3881.

Remember that all programs printed in the magazine are worth £10 to the authors. If the creators of last month's Apple program and also Alarr's Mrssrle Attack could contact me I'd like to hear from you!

SOUND ADVICE

Hints for the Atari still flood in thick and fast

This one comes from Adam Davis of York. He says that typing POKE 54018,52 will enable you to start the cassette recorder just by pressing play. This saves you having to type CLOAD. You can then access the heads easily for cleaning, or play music through your TV speaker. (The light program, perhaps?)

VIC BEEPS

Chris Bond of Selby, North Yorkshire, sent me this Vic tip which should run on any model.

It will sound a beep whenever a key is pressed, similar to the Atari keyboard. This saves you having to look up to check whether the key has been registered. Once you have typed in the program and run it, you can type NEW but the beeps will continue.

```
10 FOR T= 0 TO 65.READ N POKE 828+T,N: NEXT T
20 SYS 828: REM this turns on the beeps.
30 DATA 120,169,3,141,21,3,169,73,141,20,3,88,96,165,197,201,64,208,3,76,191
40 DATA 234,120,169,92,141,20,3,69,76,191,234,169,13,141,14,144,166,87,232
50 DATA 169,206,141,12,144,224,16,208,12,162,0,142,12,144,120,169,73
60 DATA 141,20,3,88,134,87,76,191,234
```

HORACE AND THE BUGLETS?

There seems to be even more buglets creeping into professional software. After Jetpac and Arcadia, here's one from Horace and the Spiders — again for the Spectrum.

James Mortleman writes from South Woodford, London, that if you walk backwards on the first sheet after clearing just a few of the obstacles, you will find yourself on screen 2. Useful, eh?

VIC TIPS

Remember that Vic tip from last time about SYS 256 being equivalent to LOAD? I know it isn't, but P O'Connell from Wluckham has sent me this routine which will allow SYS 256 to act as LOAD.

```
10 DATA 169, 1, 162, 1, 160, 255, 32, 186, 255
20 DATA 169, 0, 162, 256, 160, 256, 32, 189, 255
30 DATA 169, 0, 162, 255, 160, 298, 32, 213, 255, 76, 31, 19
40 FOR X=0 to 29: READ B: POKE 256+X, B: NEXT
```

and then use SYS 256 for LOAD.

BBC CHEATS

BBC tips have been quite scarce in Bug Hunter, so let's remedy that with this offering from Hardy Dore of Queens Park, Bedford

Here's a way of cheating on Planetoids. If you're legal, decent, honest and truthful then don't read on. If you're not, press BREAK, type PAGE=&3COO (return) and LOAD "Plant!" (return).

When the program has loaded, enter line 150 ?&276B=&99 and then RUN. You now have 99 lives!

BUGGED 'PHONE

I often get telephone calls on the Bug Hunter 'phone (01-278 3881) saying "I've checked this program through a dozen times and it still won't work."

I inform the caller that many readers have had this game working that in most cases I've actually played it myself before it was printed — but I still cannot convince the caller of his or her error.

So you may be interested to read this letter from a reader in Essex.

"I recently wrote to you regarding a possible bug in the Ladder Maze program. I have now found that it was my typing that was at fault. I had typed a full stop instead of a comma at line 960.

Many apologies for this. Although I had checked my listing several times I had overlooked the error every time."

See, it's not always our fault! But even so, I'll still try to help you if you call me during office hours.

ZX CHEATS TOO!

For ZX81 owners, if you were envious of this month's cheating exercise for the BBC, here's one just for you.

It comes courtesy of D. Howie of Bedford — who tells me a way of breaking into auto-run cassettes. As to why anyone should want to stop a game from auto-running I cannot think, but here it is anyway!

Simply type FAST, (N/L) and then RAND USR 836 (N/L). This is similar to LOAD. Start the tape playing and all should go smoothly. Once loaded, you can list or run the program (so he says).

SUBSTRIKE — TEXAS

It may be going back a bit, but you may be interested to know why that Substrike program which which you copied from June's issue for your TI99/4a didn't work. In line 1010, replace A=D1X with A=A+D1X and you should be able to move correctly.

PINBALL — SHARP

A minor bug crept into November's Pinball program for the Sharp. After the second quote marks on line 766, add a colon and then GOTO 780.

ORIC-BARREL

The Oric program from November's issue, Toll out the Barrel, was printed in capitals, which made a few characters look rather odd. Line 500 is confusing. It should say . . B=B-40.

MANIC PHONES

Many thanks to Andrew Latham for the detailed description of how to get past the telephones in Manic Miner. I'll let you know if I manage it.

C&VG YEAR BOOK

The *Computer and Video Games Yearbook* for 1984 is now on sale, but unfortunately it has not escaped the infiltration of Mal and his team.

The Atari versions of Pirates and Polyps and Interstellar Intrigue both seem to be causing you lucky readers who have already got their hands on a copy some problems. If you drop us a line, enclosing an SAE, we'll put you right. The same goes for the Spectrum version of Pirates and Polyps. Please mark your envelope with the name of the program which you are interested in.

Well, that's it for another month. Don't forget that you can always talk to me about your computer problems on 01-278 3881. I've just had one of those posh answering machines fitted to the bug phone so if you are suddenly struck by a bug in the middle of the night or at the weekend you can leave me a message. You may also find that the machine is on during the day if I'm tied up with the dreaded Seventh Empire — someone has to type all your moves into the computer! — but leave me a message and I'll call you back.

BY ROBERT SCHIFREEN

THE SEVEN

TRADING COMPETITION

Welcome back again to the Seventh Empire — let's start with the result of the trading competition.

This is the part of the game which anyone can enter, even if you're not a registered player in the game.

The idea is to predict which star will have the highest trade index for the coming turn.

The highest value this month is at Jadeg, which notched up a trade index of 1050. Unfortunately no one managed to predict this, so the prize goes back into the hat yet again.

The trade index is calculated by the computer monitoring the number of merchant fleets arriving at and leaving a star system.

Traders coming to the star system are the sellers, and those leaving are the buyers.

Each star also has a trade value. Hearts are elixir stars and are worth 200 points. Diamonds are gem stars and are 150 points. Asterisks are energy stars (100) and circles are gateway stars (50 points).

The equation you need is Trade Index = Trade Value X(buyers/sellers). If you can predict which star will have the highest value, then there'll be some free software in it for your micro.

You'll have to act fast, though. Next month is the last turn of the game.

Send your entry in on a postcard or stuck-down envelope to Seventh Empire Trading Competition, *Computer and Video Games*, Durrant House, 8 Herbal Hill, London EC1R 5EJ.

THE TOP SCORERS

The title of Hero of the Month for turn five goes to M. Walsingham of Surbiton, Surrey. He managed to clock up 4,250 points this turn. He must be fast approaching the top overall score which currently stands at 9,449 for all five turns.

Second this month is M. Dunderdale of Longton, Preston, with 4,000. The rest of the top ten looks like this, 3rd Alan Sparkes of Havant, Hants (3,750), 4th K. Whitefield, Stroud, Rochester (3,730), 5th is A. Jackson from Burnley, Lancs (3,500), 6th A. Taylor of Tarleton, Lancs (3,445), 7th G. Marshall of Redditch, Worcs (3,250), 8th T. White of Haxby, York (3,163), 9th is M. Allan of Fnlhem, London, with 3,100 and 10th is David Speight from Blackpool with 3000. Congratulations to all.

To find your own profit for this turn, look at the black and white table. Cargo profits are printed normally while plunder profits are white on black.

The names down the left column are the stars travelled from, the star travelled to is printed along the top.

Orders are now due in for turn six. This is the last turn of the game, and the player who comes out on top overall next month will be announced the grand winner. The lucky player will receive a brand new ColecoVision games centre.

Orders must be in by Friday 25th November. I keep a list of any orders which arrive too late to be included, so if you think that your moves may have been late give me a ring on the special phone number and I'll let you know.

If you are desperate, you can phone your moves in to the Bug Hunter answering machine, but ONLY during the weekend after the closing date. Your moves will then be added to the list on Monday morning.

	As	Be	Ce	Du	Et	Fe	Ga	He	Ir	Jl	Ka	Ll	Mu	Nu	Op	Pu	Qa	Rl	So	Tu	Ut	Va	Wl	Xu	Ye
Asel		1000	1000	333	500		1000				166				1000		100		1000						
Barev	250														1000	1000		500	166		1000	1000	1000	166	
Cazav	500	500		250	1000		1000		111		1000					1000		333			1000				
Rusap	333		1000		1000	333		1000		1000	1000	333								1000	83	333		1000	
Erak	250		500				500	166				1000	500	1000		250	1000		250					1000	
Ladie	1000		1000	1000				1000	1000		250				250		1000		1000			250	1000		
Dazor	1000	1000	333			1000				1000															
Hazed	1000											500	250		500	500	500	100						1000	
Itip				250	333	166					250		250				200			1000	333				
Jisis	333	1000			1000		1000								1000	1000		1000							
Kotel	125		250	250	250			1000				1000	250		1000		333	1000	500	250					
Limg	1000		1000		500				1000	1000		1000			1000		1000		1000	1000				1000	1000
Mugip			500				500	1000					500			1000	1000							1000	
Nazet	500			500	500	1000			500	333				500				1000				1000			
Opod		1000				333			1000			333				1000			125			1000	500		
Puted		1000		333				1000			250		1000						1000				500		
Qarsov			333				500		166		250				1000			125	333	1000					
Rivov	1000					166		250		500			1000												
Sonor	125	333	500				1000			1000	1000	1000	333	100		1000			1000	1000	1000	1000			
Tebus												1000			1000	1000								1000	
Unugx	1000		500			500		1000		500	333	1000	166	333		1000			100		1000			1000	
Vosus	1000		1000		500			500			1000	166	1000		1000			333				333			
Widan				1000		1000	1000	250	250	500		500		250											
Xuged		1000		333		500	250		250	500	250		250		250	1000									
Yuser	1000		125		1000		1000	500		1000	1000	500		500	1000	100		1000			62				

	Compare new star to the star you left	Moving orders
MOVE	Does it belong to a **friendly** empire? Is it 1 square away either vertically or horizontally or diagonally?	
TRADE	Does it belong to a **friendly** empire? Is it 1 square away either vertically or horizontally or diagonally? Is it a **different** star type?	
RAID	Is it 1 square away vertically or horizontally but **not** diagonally?	Is it the **first** movement phase?
	Does it belong to an **alien** empire?	Is it followed by a Retain order?
RETURN	Is the fleet Returning to a star belonging to the **same** empire as it left on the first movement phase?	Is it the **second** movement phase?
	Is it 1 square away vertically or horizontally but **not** diagonally?	Does it follow a Raid order?
ATTACK	Does it belong to an **enemy** empire?	If it's first movement phase, is it followed by a Stay order?
	Is it 1 square away vertically or horizontally but **not** diagonally?	If it's second movement phase, did fleet move in its own empire on first movement phase?
STAY	Is fleet staying at present star?	Was your first order anything but a Raid order?
CARGO, JUMP AND PLUNDER	Does fleet start game turn at a Gateway Star?	Has it only one order over both movement phases?
	Does it move to a Gateway Star?	Is the other movement phase crossed out?
	Is it a different Gateway Star?	

Friendly = Empire which a fleet's current empire is not at war with
Enemy = Empire which a fleet's current empire is at war with
Same = **Same** empire as the one you've left
Alien = A star belonging to an empire **other** than the one you left

The Checklist Chart is one way of ensuring that you have not entered an illegal order which may result in one of your fleets becoming lost in space.

Whatever movement orders you have given each of your seven fleets they should be checked against this chart. And if you can answer 'Yes' to each of the questions set out there then the move is a valid one.

If you come up with a 'No' then the order is illegal in that context. In order to prompt 'Yes' answers some of the questions are phrased in an unusual way.

TH EMPIRE

BATTLE REPORT

There were 23 battles this month. Once again the defenders held out against the few attackers. Battle bonuses were all zero, except at Zapus (−2) and Girix (−3). The raid penalty for this month is again 1.

The Imperial Ships are positioned like this . D'Taans science Empire ship is at Soner and is now controlled by player 3201. The Sun Ship is at Widan is belongs to player 1781. The Pirate Ship was not moved last time, but can now be moved by player 2064. Bloodline is at Gezoi (player 1780), Dead at Yuses (2300), Amethyst at Uaug (player 1877) and Water at Mupip (2182).

FOZUZ ○	LARUB ♦	YIBET ♦	XOLIP ♥	ITIL ♥	FUNUS ♥	LULIP ♦	YANOK ♥	XOKEG ♦	ISOX ○
VIZAX ○	QIRUS ♥	HAZAN ♦	ABOB ○	SONER *	VEPOZ ♥	QATOT ○	HEZOD *	ASOL *	SUXEK ♥
RAROV *	WIDAN *	RURUS ○	MUPIP *	NAXIG ○	BETID ♦	WAVAB ○	RIVEV *	MEGUD ○	NABOK ○
DALIX ♥	OLEX ♥	TASAT ♥	CAZUV *	GOVAX ♥	DITUG ♦	OKAP ♥	TOXAZ ♦	CIXAN ♦	GOTEG ♥
ERAK *	KOVEP ♦	USUG *	PEBOB ♥	JADEG ♦	ENAK ○	KEPAR ♥	UGON ♦	POROV ♦	JINIS *
FADIS *	LOKIK ♥	YUSES *	XAPUS ○	IXIP *	FAGIL ♥	LIZAG *	YODAZ ♦	XUGOD *	IBED ♥
VASUX *	QUXIN ○	HIPEB ♦	ASOR ○	SIDAL ♥	VIZET ♦	QAVUV *	HAKUB ○	APEL ♦	SABAG ♥
BUREP ♥	WAGAP ♥	KOLEK ♥	MINEP ○	NUVEX ♥	RAZIX ○	WUPIV ♥	RORUL ♥	MEDEN ♦	NUZET *
DUSUP *	OPOD *	TUBOX *	CIGER ○	GAZOR *	DABAG ♥	OTAN ♦	TUXUX ○	CESER ♥	GIRIX ♦
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The Galactic Map

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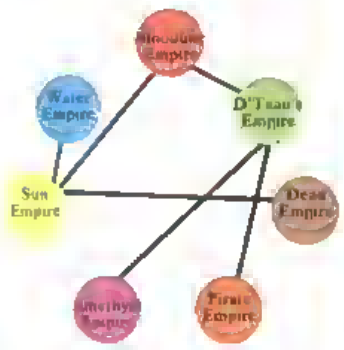
He must know when to plunge into the risks of battle and try to alter the galactic map and he must use the space-jumping Gateways wisely, running merchandise or trading the profitable rantas.



The Diplomatic Diagram

Orders in Block Caps please

Name: . . . .

Code No: . . . Telephone No

	AT	1st Movement phase ACTION	1st Movement phase STAR	2nd Movement phase ACTION	2nd Movement phase STAR
FLEET 1					
FLEET 2					
FLEET 3					
FLEET 4					
FLEET 5					
FLEET 6					
FLEET 7					

I wish to move the Empire's Imperial Ship from to

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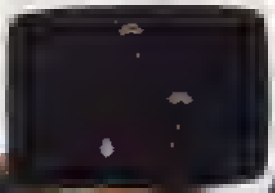

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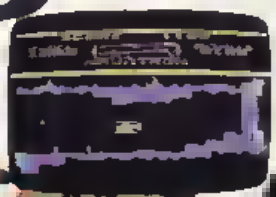

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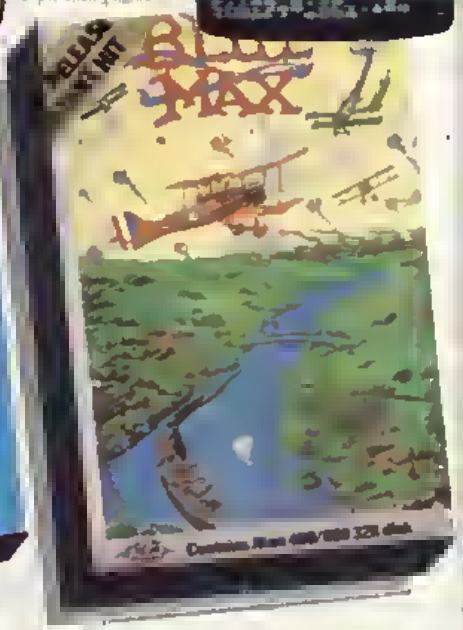

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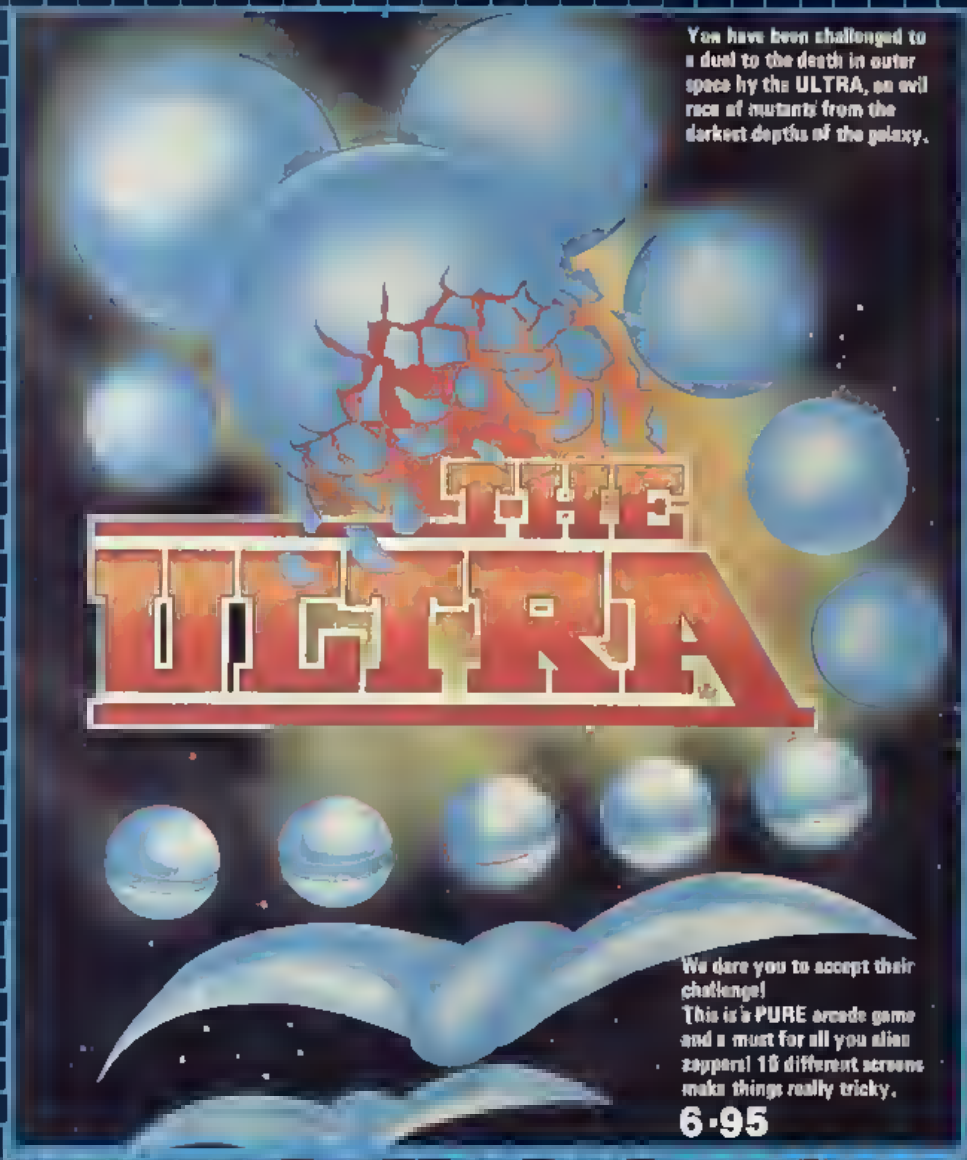

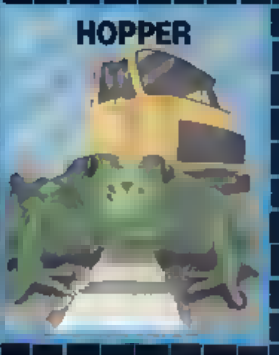

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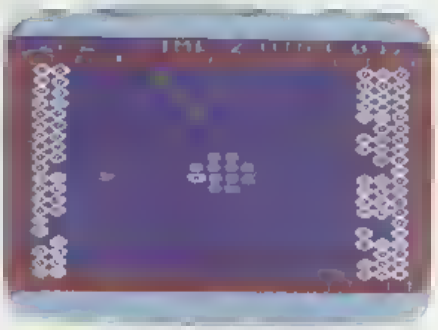

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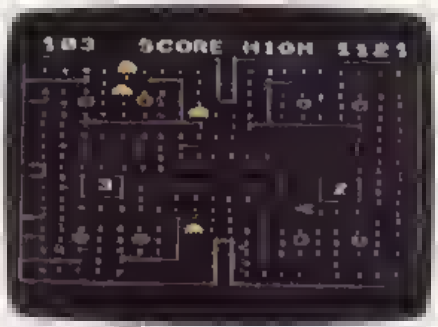

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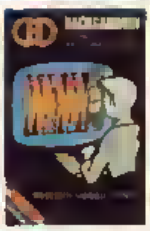

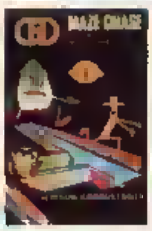

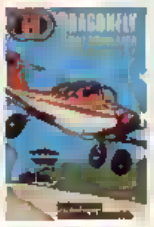

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We would prefer a tape and listing but can work from just a tape and will return it to you if it doesn't find its way into the magazine. We will also need an additional sheet explaining the game and its theme. And any documentation like lists of variables or how certain routines are working, would be of great help to beginners. Please make sure that your name, address and the program name is on everything you send us, including the cassette itself.

This form will merely help us to keep a check on your game as it goes through our testing process and make sure we have all the information we need to present it properly in the magazine.

If you don't want to cut up the magazine, we will accept photocopies or close copies of this page. This form will be appearing regularly in C&VG issues from now on.

Remember we pay £10 for each listing published and you could win our Programmer of the Year Contest where we will try to turn the winner into a best-selling games author.

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CORRECTION

In a recent ColecoVision T.V. game advertisement reference was made to the maximum cartridge power of Mattel Intellivision.

Mattel Electronics have informed us that their Intellivision Module has a potential maximum game cartridge power of 64K.

Ideal Toy Co. Ltd., wishes to apologise for the inaccuracy and misleading impression which it may have caused.

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STAND BY FOR ADVENTURE

High Adventure will be coming to the pages of *Computer & Video Games* next issue when we proudly present the *C&VG* Book of Adventure. It will be packed with reviews, features and competitions — a must for experienced Adventurers and those of you thinking about taking a break from space shoot outs. The whole thing is being masterminded by *C&VG's* Adventure supremo Keith Campbell, and he'll be writing about the history of Adventure, reviewing games, presenting a big helping of your letters, and answering your Adventure problems.

We've also managed to collar the man who has written some of the best Adventures of all time — Scott Adams. He'll be revealing a few secrets and talking about his now famous series of Adventures.

There will be features on writing Adventures, mapping to solve them and the play-by-mail games that keep the Post Office busy!

The Book of Adventure will also include a look at the recent video-game Adventure boom — plus much more. Can you afford to miss it? Demand is bound to be high for this issue of *C&VG* — so place your order now!

Meanwhile — within the pages of *Computer & Video Games* — the magazine, something is stirring. All the regular features will be there — plus the second in our new Program Extra series. In conjunction with our Book of Adventure we'll be starting off a special Adventure listing series for the Sharp MZ80k by Frank Rodney.

On the games front we've uncovered an original and very addictive game for the Spectrum called Demolition. Our reviewers say it's the best game they've seen for a long time with great graphics and an even better playability rating!

For Atari owners we'll be presenting a little number called Crash Landing — watch out for the flying wreckage! And, yes, Vic-20 owners, Turnip Turmoil will actually appear in our January issue. We just couldn't get them dug up in time for this issue!

Meanwhile, Texas owners will be watching the skies for Paratroopers, our offering for the TI, and those of you with a Sharp could suddenly become bird-watchers if you like our listing for your machine, called Eagle. These creatures definitely don't have bird-brains!

Moving on to the Dragon there will be a nifty little listing for this particular micro called Road Runner. Beep! beep! We also hope to add the ZX81, Atom — and, of course, the BBC B to our list for next issue. Phew!

Moving on to competitions — yes, we'll find room for them too — we hope to be able to put up those three Coleco ADAM family computer systems on offer. Unfortunately they just couldn't make it across the Atlantic in time for this issue.

Plus whatever we dream up in time to go into the issue — so don't forget to rush out to your newsagents on December 16th and grab a copy of *C&VG* with free Book of Adventure. You know it makes sense!

OUR SCRABBLE WINNERS . . .

There was a tremendous response to the Scrabble competition announced in *C&VG's* October issue and we have now chosen the six finalists who scored the highest number of points. They will all go forward to a grand final, the venue to be announced later, where they will battle it out over the Scrabble board. The winner will receive a 48k Spectrum and scrabble tape from Psion as first prize with the five runners up receiving a De-Luxe Scrabble Set from Spears.

The six finalists were: Andrew Scott, Peterborough with 341 points; P. Lewis, Sheffield with 341 points; Miss R. Chapman, Sheffield with 341 points; I. MacNiell, Fort William with 341 points; Peter Foord, Avon with 339 points and Mrs Margo McDonagh, Ireland with 338 points.

Our scrabbling expert commented that some people got higher scores but were eliminated as they didn't play according to the rules. They used the letters of one hand to make several different words in the same go.

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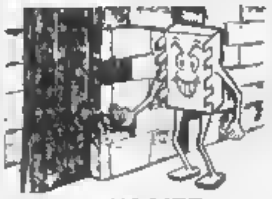

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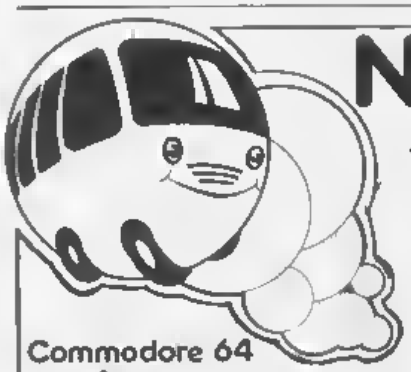

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CVG 12/83

By the flick of a switch you could unleash the power of Genon in your own living room! But by thoughtful strategic play you could overcome Genon.

The only way this can be done is by destroying the powerful computer that controls all things.

After being transported to the Corridors of Genon you'll need your wits about you to master the door codes and venture through the corridors to locate the computer. While this is going on the computer will know your exact whereabouts and try to force you into a mistake by closing doors around you.

The computer also controls Bogul – the guardian of the corridors who can reduce your thought power (ESP) every time it finds and bogulises you, so you'd better listen out for its approaching footsteps!

Should you locate the computer and should your ESP be sufficient you'll have to pull on all your energy to try and master the 3 digit self destruct code.

With this done, now is the time to escape from the corridors. No door codes to worry about this time. But its no easy task as Bogul will have cloned – how many times though? Well that depends on how long you took to crack the self destruct code. There could be as many as eight! And you'd better be careful as only one Bogulisation and you've had it!

Full colour graphics, sound effects and, of course, 3D machine code action as you would expect from Malcolm Evans 'the 3D expert'*, to push your 48K Spectrum to its limits. 'Corridors of Genon' is supplied with a keyboard overlay and is also compatible with the Kempston joystick.

If you survive this you could try . . .

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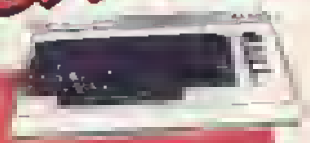

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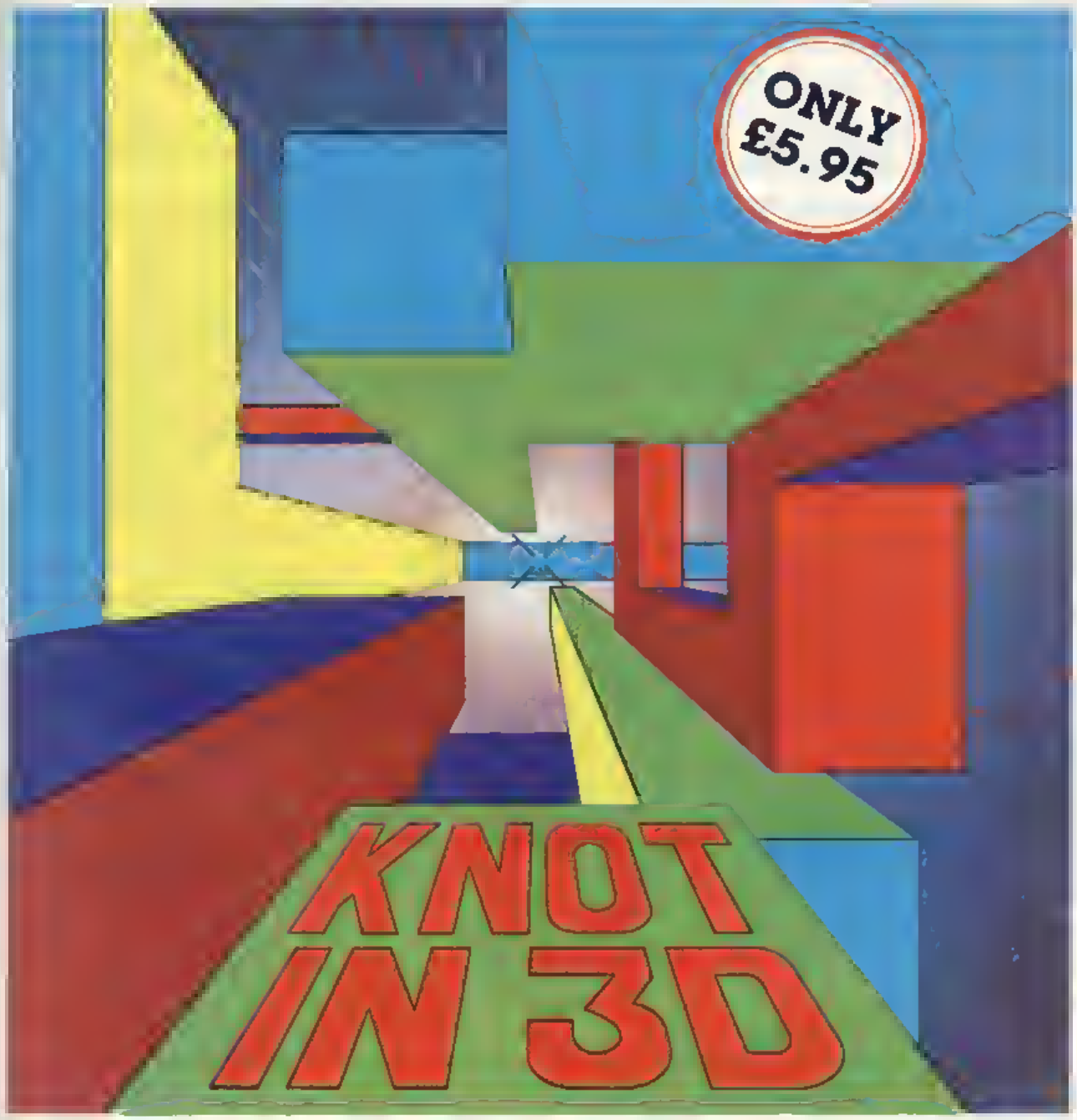

Known by some as 'getting knotted'. You won't find a game for the 48K Spectrum quite like this anywhere else!

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Naturally you'll be terminated when you out manoeuvre yourself and get caught in 'the knot'!

Don't just take our word for it –

'A highly original, professional and exciting game and one that I could play all night – very highly recommended' – ZX Computing

'Knot in 3D must be one of the most beautiful, graphically, games to be seen on the Spectrum' – Popular Computing Weekly.

'Even 3D maze games can get repetitive but Knot in 3D contrives to be an interesting and innovative game by standing the 3D maze concept on its head' – Personal Computer News.

'Most 3D games have either a graphic display or an addictive playable game – but not both, this is one of the few that combine these qualities' – Computer & Video Games But that's not all . . .

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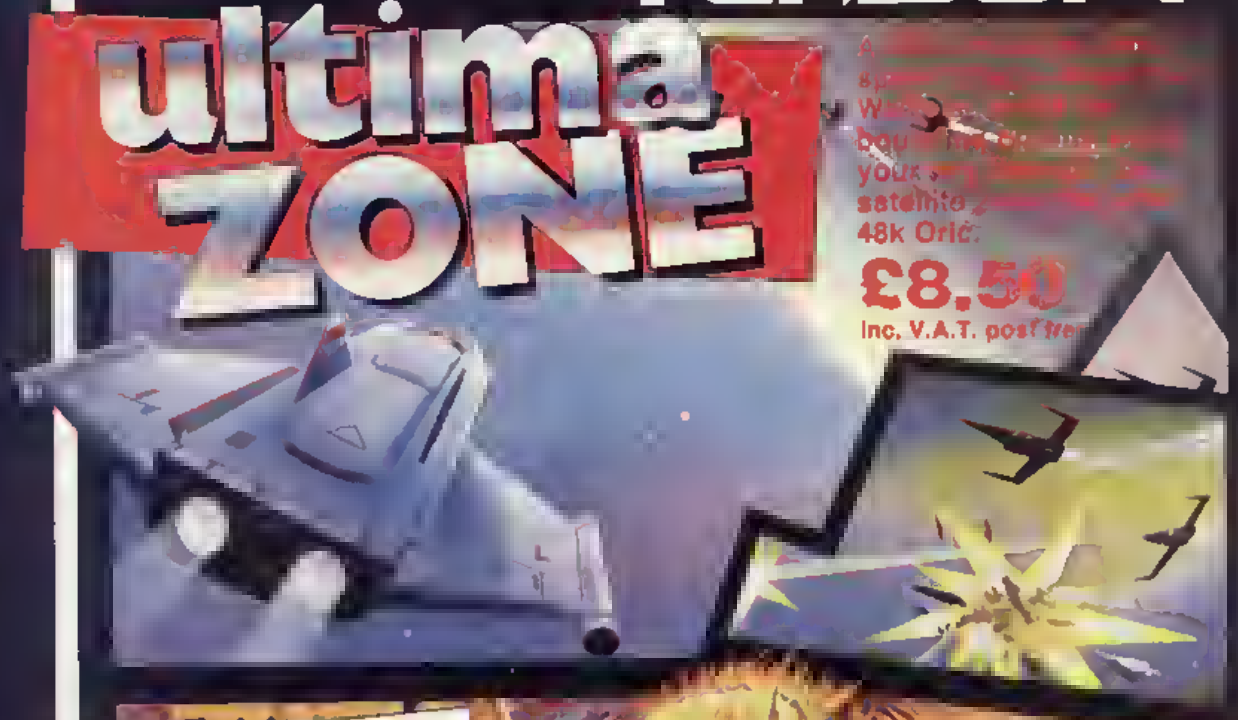

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THE BUGS ARE STILL RECOVERING FROM THE BASHING OUR PROGRAMMER GAVE THEM IN THE LAST ISSUE...!!
MAYBE WE DID GO A BIT TOO FAR!
... COULD HAVE BEEN AVOIDED IF YOU HAD NOT DESTRUCTIVELY INTERFERED WITH THAT CHECS PROGRAM. BLAH! BLAH! NAG! BLAH! BLAH! BLAH!
.. I SUGGEST WE DONT MESS UP HIS NEXT PROGRAM!
WOW!
I'VE JUST GOT THE MOST ADVANCED COMPUTER MUSIC MAKING CASSETTE AS A PRESSY!
.. I AGREE BUT, ONLY UNTIL CHRISTMAS IS OVER AFTER ALL, THERE'S NO FUN LIVING IN THIS COMPUTER IF WE HAVE TO BEHAVE IN IT!
OK!
OUR PROGRAMMER GETS TO WORK!
PLINKY PLONK!
FANTASTIC! A FEW MORE HOURS AND I'LL HAVE CREATED MY GLORIOUS SYMPHONY IN 48K...!!
HOURS PASS..
PLONKETTY PLINK!
.. I'LL BE HAILED AS ANOTHER BYTE HOVEN. HEH! HEH!
THE BUGS ARE NOT IMPRESSED!
PLONK! PLUNK!
GROAN! IT'S TERRIBLE SOMEONE STOP HIM!
YERK!
SEEING AS IT'S CHRISTMAS LET'S HELP HIM OUT WITH THIS PROGRAM!
HMMM! OK THEN, JUST A LITTLE IMPROVEMENT!
AT LAST!
WAGGLE!
STAND BY FOR SQUEALS OF DELIGHT FELLOW BUGS!
.. WITH THIS LITTLE DIGIT, I SHALL LAUNCH A MILESTONE IN MUSICAL DEVELOPMENT UPON THE WORLD!
JINGLE BELLS! JINGLE BELLS!
SNARL!
CHRISTMAS OR NOT, THIS CALLS FOR A GRADE 'A' BUG BASHING!
THERE'S NO PLEASING SOME PEOPLE!

Step into the third dimension

Take a giant step closer to reality with New Generation Software. The 3D Graphics of New Generation programs bring the screen alive and makes other games look as flat as snakes and ladders.

Spectrum owners will find that seeing is believing when they open the door on 'THE CORRIDORS OF GENON', the latest creation from New Generation. You will be saving the Universe from the evil that now controls all things. But beware – the sound of footsteps approaching could be Bogul!

Hurtle into a void leaving a trail for your unseen pursuers in 'KNOT IN 3D'. Weave your way through up to five trails but be careful, you could get knotted! Or travel through the depths of a moving tunnel full of bats, rats, spiders and toads in '3D TUNNEL', with a special surprise in the 48 K version.

Stamina is the vital ingredient of 'ESCAPE', as you'll be venturing into the maze pursued by walking and flying dinosaurs.

ZX81 owners must be prepared for the shock of coming face to face with the T. Rex that leaps out from '3D MONSTER MAZE'. '3D DEFENDER' takes you out of this world and plunges you into space in a fast moving game to defend your home planet against alien spacecraft in a blitz of explosions, plasma blasts and photon beams.

All these exciting 3D games have been designed by Malcolm Evans, the 3D expert. They'll have you leaping out of your seat because you don't just play New Generation games, you live them.

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Knot in 3D for 48K Spectrum *'addictive playable game' Computer & Video Games*	£5.95
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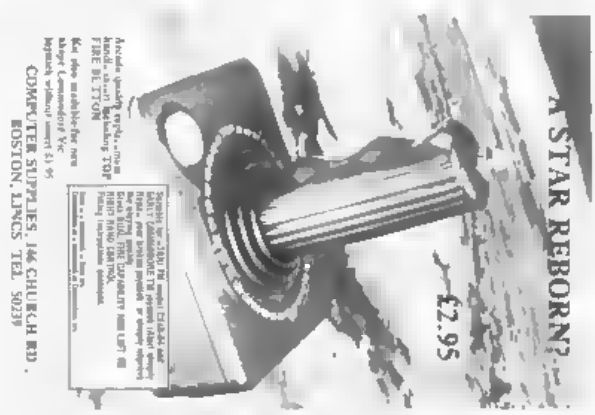

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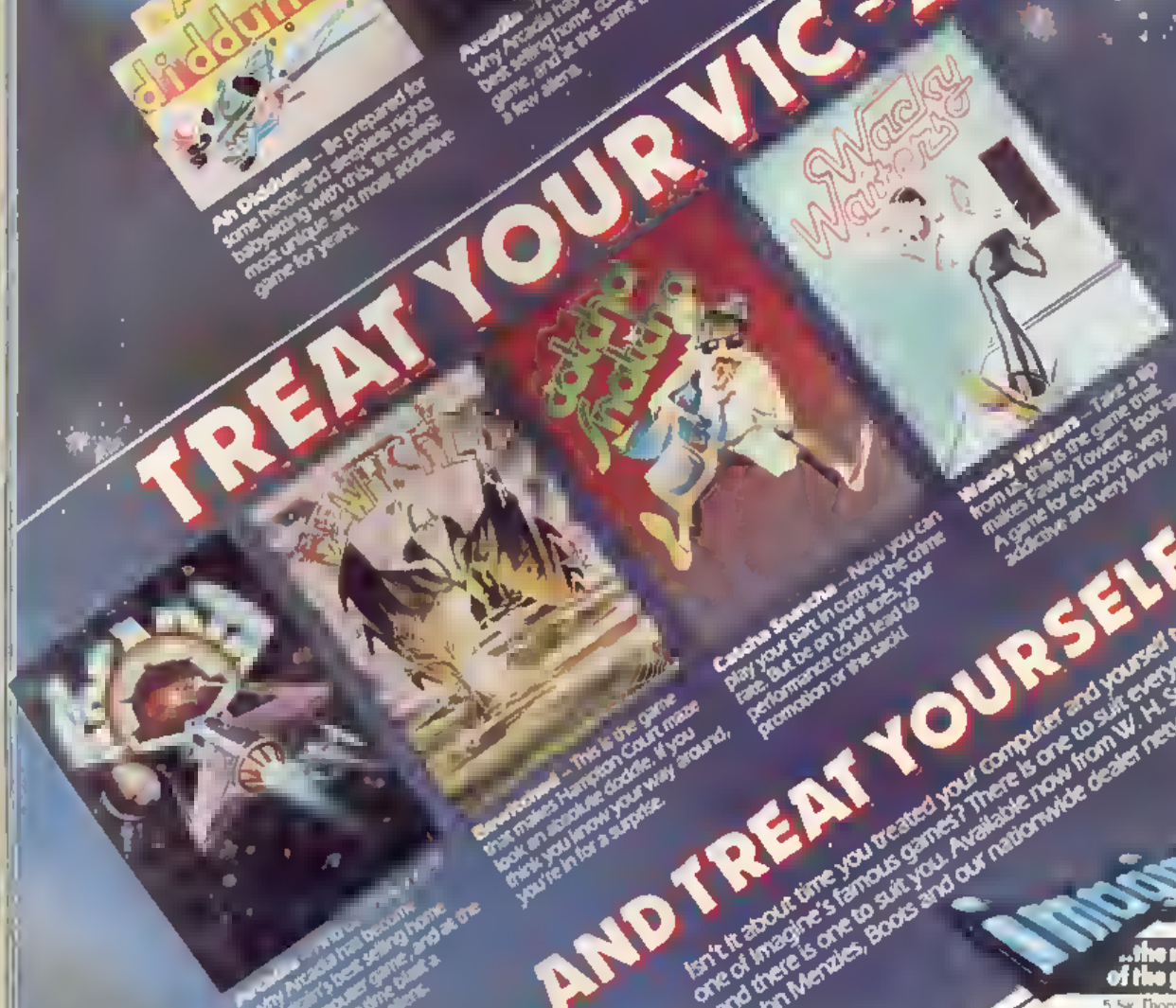

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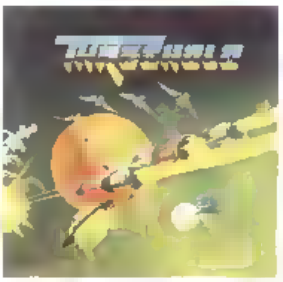

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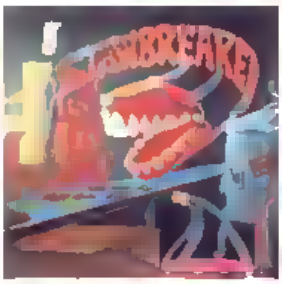

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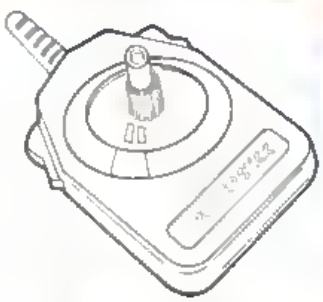

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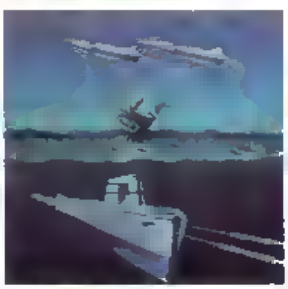

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